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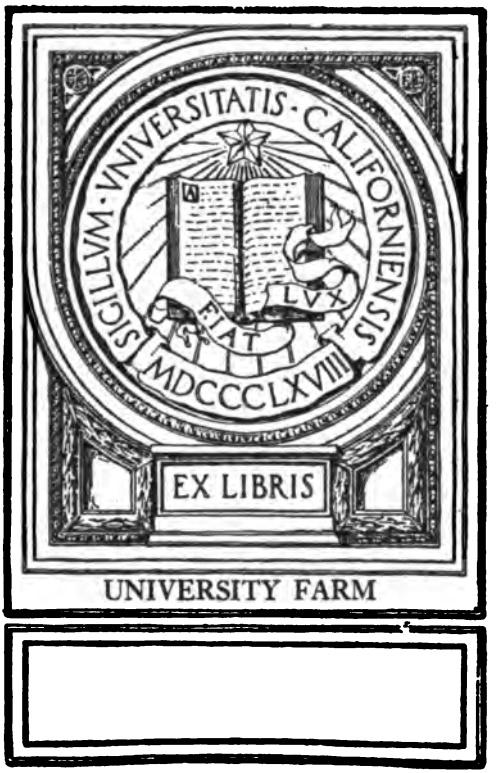

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TRUMAN M. SMITH

(See opposite page)

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Trees, Fruits and Flowers

—OF—

MINNESOTA.

1910

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1909, TO DECEMBER 1, 1910, INCLUDING THE TWELVE NUMBERS OF "THE MINNESOTA HORTICULTURIST" FOR 1910.

EDITED BY THE SECRETARY,

A. W. LATHAM,

OFFICE AND LIBRARY, 207 KASOTA BLOCK,

MINNEAPOLIS, MINN.

Official Stenographer, A. G. Long, Excelsior, Minn.

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THE MINNESOTA HORTICULTURIST

Vol. 38. JANUARY, 1910. No. 1.

IN MEMORIAM

Truman M. Smith

Passed Sept. 18, 1909, aged 84 years.

The subject of this sketch, which is prepared in loving remembrance of many services rendered to this society, was born in Danby, Vt., on June 19th, 1825. Of his earlier history we have no record until his removal to Geneva, Wis., at about the time he attained his majority. Remaining there only a few years, he came on to St. Paul in 1851. At that time the present capital of the state was only a small beginning of what it has now grown to, and there were openings which an active young man with a good education, as was the case with Mr. Smith, could readily make. At the very first, there being no more satisfactory showing, he took a contract to cut a quantity of cordwood near by the town, which contract he carried out, although, I understand, at some loss to himself, but in doing this he showed the strict probity of his character, which through life continued to be one of his marked virtues. Following this work he readily found employment in the city, and not long after opened a collection and real estate agency. A good deal of real property which has now become immensely valuable passed through his hands during this period of his life.

In due course, his interests increasing and his means accordingly, he opened a bank in St. Paul, having in the meantime also established, in company with a Mr. J. V. Tostevin, who survives him, the first marble works that were located there. This firm continued to do business after the retirement of Mr. Smith under the name of Tostevin & Sons until only a short time since.

The panic of '57, that swept the country, resulted in the financial ruin of Mr. Smith, who went down with nearly all others who were

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engaged in the banking business. After his failure, which must have been a severe blow to this rising young man, he was apparently in no way discouraged but immediately started in another line, and that in which we know him the best, as a gardener, growing both vegetables and fruit for the market, which work he carried on for that day on a large scale. He was especially known with the horticultural society as a grower of grapes, having one of the finest vineyards—located in South St. Paul, on Dayton's bluff—that was in existence in Minnesota at that time. The writer remembers very well a visit which he made to this vineyard in an early day when the ground was well covered with snow, the mounds under the earth indicating the depth of earth over the vines to prevent them from winter-killing.

In the year '87 Mr. Smith, having disposed of most of his property at St. Paul, removed to San Diego, Cal., his interest in fruit growing inducing him to change his residence to a climate in which he could indulge in its fulness his leading passion. If Mr. Smith returned to Minnesota from that time until August last, a few weeks preceding his death, it is unknown to the writer. Occasional personal correspondence with him kept us informed as to his circumstances, health, etc., and we looked forward to meeting him again at some convenient time. This came at last a few months since when the death of his wife made it necessary for him to come to St. Paul with the remains, and for a few weeks he was with his friends here, and then after a brief illness he passed away. The writer, Mr. Wyman Elliot, Mr. Chas. M. Loring, and others of his very old friends who remain, had the pleasure of passing many reminiscent hours with him during this brief period. On the 18th day of September he went to his reward, ripe in years and in service.

Mr. Smith was the first master of the first state grange in Minnesota, also the first master of the first grange organized at St. Paul, which was afterwards disbanded.

As a member of this society he should be especially honored for the high rank his services take, made in a day when there were comparatively few to bear the burden of the work. He became a member of this society in 1868, two years following its organization, at the same meeting at which the writer also became a member. The records are a little confusing as to the earlier history of the society, and I note that Mr. Smith's name appears as chairman of the executive committee of the first organization, which was made at Rochester in 1866. It would seem that his name should have been on the membership roll at that time, but for some reason it fails to appear. In 1873 he was elected president of the society, which position he

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held for six consecutive years; then after an interim of five years he was re-elected president for two years more. His name appears then as a member of the executive committee for one year, at the expiration of which time he removed to California. In 1884 Mr. Smith was made an honorary life member of this society at the same time with fifteen other members, the list including such names as L. M. Ford, J. T. Grimes, P. A. Jewell, Peter M. Gideon, etc. With three exceptions this entire list of fourteen have passed from our midst.

Mr. Smith left at his decease of near relatives a sister, eighty-seven years old, now living in Cataraugus county, N. Y.; also three children, two daughters, Mrs. J. G. Miller and Miss Mary F., and one son, Chas. T., all residing in St. Paul. Besides this there are of his descendents nine grandchildren and five great grandchildren.

In fulness of years our honored friend passed away, leaving a memory rich in good works and sincere endeavor.—Secretary.

Annual Meeting, 1909, Minnesota State Horticultural Society.

A. W. LATHAM, SECRETARY.

At just five o'clock of Friday afternoon, Dec. 10th last, the final session of the forty-third annual meeting of the Minnesota State Horticultural Society, at a time just one hour later than that fixed on the program, came to a close, with eighty members still on the floor by actual count. The four days' meeting, with two long sessions for each day, running from nine in the morning till five and six o'clock in the evening—with one and one-half hours noon intermission—had been filled to overflowing with good things of untiring interest to the Minnesota horticulturist. Short papers and discussions; demonstration exercises in grafting, cross-pollination, packing of fruits, judging seedlings, etc., "question and answer exercises" of one-half hour each preceding each session and led by experts in the society, an exceedingly varied program conducted in part by the auxiliary societies, including Woman's Auxiliary, State Florists' Society, State Rose Society, State Forestry Association and Plant Breeders' Auxiliary, made up a series of exercises that were at no time tedious to the audience—and when any member in attendance desired a change it was only necessary to go into the fruit room on the floor below, where there were always scores of members to counsel with on the many subjects of interest that were continually coming up in connection with or

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suggested by the fruit exhibit.

The attendance was at high water mark. At least one-half more than any previous year had notified the secretary of their desire to have their names in the badge book, and the attendance at the various sessions would range comparatively in some such similar proportion. The opening session found at least three hundred in attendance. Mr. Trafford N. Jayne sang one of his inimitable opening solos, Mr. Harrison gave the invocation, President Green in a few earnest and hearty words gave greeting to the membership, and the meeting was on.

With two exceptions every member representing a paper or address was in attendance to take his or her respective part, and in the case of these two absentees their papers were at hand for presentation by the proper officer. One hundred four took part upon the program definitely, and their names appear therein. A large number of others had equally definite parts whose names did not appear. Besides this the reception committee absorbed the attention more or less during the meeting of twenty-four members. Mr. D. W. C. Ruff, of St. Paul, was chairman of this committee. Mr. W. A. Yahnke, of Winona, was chairman of the committee of ushers, some twelve or fifteen. Besides this there were the judges, the various assistants and many others who were called upon for limited services, all of which were rendered freely and cheerfully from an earnest desire to help forward the work of the association. With such a corps of helpers and such an audience of earnest members, how can the Minnesota society help ranking high as it does in the wonderful service it is performing for the community?

In the preparation of the program it is evident that there is a steady movement towards what might be termed practical demonstrations in horticulture, and the experience with this so far shows the intense interest they create and indicates a demand for larger work in a similar direction. It is hoped another year to have demonstration lessons in packing fruit, spraying, etc., in addition to what the present program has provided.

At the close of each afternoon session of the first three days there were stereoptican entertainments, not too long, but making from the feature of diversity a fitting conclusion of the work of each day.

A careful study of the program, which will be found in the bound report for 1909, will give a better idea of what was done at this meeting than can be noted in this short recital.

There were delegates present from Wisconsin, Iowa, South Dakota and North Dakota, all of whom took some important part in the various exercises of the meeting. Prominent men from abroad whose

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presence may be especially noted were Prof. W. M. Hays, Assistant Secretary of Agriculture, from Washington, who delivered an exceedingly practical address on "breeding" with stereoptican views, at the close of the Tuesday afternoon session. Prof. C. B. Waldron, horticulturist of the North Dakota Experiment Station, was present and took an important part, dwelling upon a subject of large interest with Minnesota orchardists at this time, the comparative practice in orcharding in our state and in the northwestern states. Prof. N. E. Hansen, of the South Dakota Station, who is recently back from his third trip in northern Asia looking for hardy fruits and farm products, gave us in two brief talks a summary of his achievements and adventures there. Unfortunately he could be with us only the first day, and the same may be said of Prof. Hays, as their attendance was demanded at a meeting of the American Breeders' Association, convening the next day in Council Bluffs, Ia.

The size and quality of the fruit shown in the basement was worthy of highest commendation. Fifty-seven entries of pecks of apples had been made and forty-eight were actually shown—so many that the $30 award, to be divided pro rata with this class of exhibits, dwindled down to the neighborhood of sixty cents each. Rather a slim compensation. It would seem that this particular premium should be arranged in the future on a sliding scale to depend in its total somewhat upon the number of exhibits shown.

There were exhibited twenty bushel boxes of apples. While the fruit shown in these boxes was excellent, the method of packing would indicate inexperience in this work, and as this is likely to be the way in which choice fruit is to come to market hereafter it is evident that instruction along this line is much needed by Minnesota orchardists. There were five exhibits of collection of apples, also four exhibits of top-worked apples. Besides this were shown the extraordinary number of 580 single plates of apples entered for premiums where but one plate of a kind can be shown. In all 901 plates of apples were shown besides the pecks and bushels on exhibition.

There was an unusual exhibit of seedling apples, some forty-five entries being considered, 205 different plates being shown. Amongst them were a number of winter varieties that scored high, the best being a large sized red apple similar to the Wealthy in appearance, history unknown, from a Mr. Lillie, at New Ulm. Probably Mr. Wyman Elliot, one of the judges in this department, will prepare a more extended description of this class of exhibits.

A creditable display of grapes and a few plates of nuts made up the total of an exhibit that filled to overflowing the fruit room, and set

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the executive board to talking about what arrangements could be made another year to secure more space for the fruit exhibit.

The premiums amounted in all to a little over $300, distributed among forty-two exhibitors.

At the annual election there were as usual no changes in the list of the executive officers of the socicty, but, as usual also, the list of vice-presidents, one for each congressional district, was changed throughout, following the practice of the society to secure annual reports from the various districts from new material for each session.

It was a pleasure to the officers and the membership to vote unanimously for the placing of the names of a number of members who have served the society especially in various directions—or who on account of a long term of membership and advanced age it was especially fitting to honor—on the honorary life membership roll of the society. The following members were thus honored:

Thos. Redpath, Wayzata; A. Brackett, Excelsior; R. M. Probstfield, Moorhead; O. W. Moore, Spring Valley; S. M. Owen, Minneapolis; Chas. M. Loring, Minneapolis.

The society banquet was held Thursday evening, at which one hundred fifty-five sat down together, the usual interesting program following the dinner hour. There are many members at the meeting who do not find it convenient to attend the banquet. We wish that it might be arranged to bring out every member in the city, but various interests and attractions combine to limit the attendance to somewhere near the the above figure, as experience now for a number of years indicates. Here follows the program of the banquet:

PROGRAM.

Toastmaster—Roy D. Underwood, Lake City.

1. Song .....Minnesota Quartette, Minneapolis
2. "Shavings, or some such thing".....
.....Prof. E. G. Cheyney, St. Anthony Park
3. Reading—a. Indignity. b. The Caterpillar.....
.....Miss Nina Blackburn, Minneapolis
4. Song .....Trafford N. Jayne
5. "Always something doing on the farm".....
.....Mrs. H. A. Boardman, St. Paul
6. Song—two numbers .....Minnesota Quartette
7. "The North Dakota Station—nearer the Japan Current but not too near".....
.....Prof. C. B. Waldron, Agricultural College, N. D.
8. Reading—"Leap Year Mishaps".....Miss Blackburn
9. "Wit and wisdom happily mated".....
.....Trafford N. Jayne, Minneapolis
10. Song—two numbers .....Minnesota Quartette
11. "The progress of the Northwest—we are going some"..
.....A. W. Krueger, Groton, S. D.
12. Closing Song—All rise and join in the chorus.
Ye toastmaster biddeth us goodnight.

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PRESIDENT.

Prof. Samuel B. Green.....St. Anthony Park

VICE-PRESIDENTS.

First Congressional District, W. A. Yahnke.....Winona
Second Congressional District, H. J. Ludlow.....Worthington
Third Congressional District, W. L. Parker.....Farmington
Fourth Congressional District, D. W. C. Ruff.....St. Paul
Fifth Congressional District, E. F. Pabody.....Minneapolis
Sixth Congressional District, Aug. Loegering.....Long Prairie
Seventh Congressional District, M Soholt.....Madison
Eighth Congressional District, A. W. Patten.....Mora
Ninth Congressional District, Mrs. Wm. Robertson.....Crookston

TREASURER.

Geo. W. Strand.....Taylors Falls

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)
Wyman Elliot (Chairman), 3 years.....Minneapolis
Thos. E. Cashman, 3 years.....Owatonna
John P. Andrews, 1 year.....Faribault
Lycurgus R. Moyer, 1 year.....Montevideo
Clarence Wedge, 2 years.....Albert Lea
J. M. Underwood, 2 years.....Lake City

SECRETARY.

A. W. Latham.....Minneapolis

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ASSISTANT LIBRARIAN.

LeRoy Cady.....St. Anthony Park
(The assistant librarian has charge of the surplus reports of the society, which are stored in Horticultural Hall and in the Main Building at the State Experiment Station.)

SUPERINTENDENTS OF TRIAL STATIONS, 1910.

Prof. S. B. Green (State Experiment Station).....St. Anthony Park
T. E. Cashman.....Owatonna
Dewain Cook.....Jeffers
A. B. Lyman.....Excelsior
F. I. Harris.....La Crescent
L. R. Moyer.....Montevideo
Mrs. Jennie Stager.....Sauk Rapids
F. J. Cowles.....West Concord
A. H. Reed.....Glencoe
Ole J. Hagen.....Hendrum
Rev. Jno. B. Katzner.....Collegeville
Frank Brown.....Paynesville

STANDING COMMITTEES FOR 1910.

FRUIT LIST.

J. P. Andrews.....Faribault
J. M. Underwood.....Lake City
Thos. E. Cashman.....Owatonna

SEEDLING FRUITS.

Chas. Haralson.....Excelsior
Wyman Elliot.....Minneapolis
Prof. S. B. Green.....St. Anthony Park

ORNAMENTAL LIST.

Theo. Wirth.....Minneapolis
F. H. Ramsdell.....Minneapolis
Mrs. F. H. Gibbs.....St. Anthony Park

NOMENCLATURE.

Clarence Wedge.....Albert Lea
Geo. W. Strand.....Taylors Falls
LeRoy Cady.....St. Anthony Park

PUBLICATION.

Prof. S. B. Green.....St. Anthony Park
Wyman Elliot.....Minneapolis
A. W. Latham.....Minneapolis

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Seedling Apples at the 1909 Annual Meeting.

WYMAN ELLIOT, JUDGE.

The exhibit of early and late winter seedling apples shown at the winter meeting of the Minnesota State Horticultural Society was far superior in a commercial value to any we have ever made. It showed a very marked improvement over any former exhibition. There were seventy-five seedling entries made, of which forty-five in both classes were checked off by the judges. Of later winter seedlings there were

Seedling apple of Wm. Lillie, New Ulm.

twenty-nine entries judged, of which nine varieties made an attractive appearance in size and color and would be classed of good commercial value. When scored for points of excellence for size, color and quality, we found sixteen possessing real merit of commercial value. The remaining thirteen entries lacked size, color and other points of excellence. Although they showed good keeping qualities, they did not possess enough of value to recommend them for propagation and dissemination.

In the early winter class there were exhibited nine varieties that in color and size possessed many commercial points of excellence. The

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remaining seven varieties in this class were of little value commercially.

I desire to note especially one variety from Mr. Henry Lillie, of New Ulm, to which the judges gave a scoring of ninety-two points, being the highest score in either early or late winter seedlings.

Our exhibit of seedlings this year was fifty per cent better than at any other previous winter meeting, showing that there is a great interest among our members in trying to produce varieties of apples adapted to Northwestern climatic conditions.

President's Greeting at Opening of Forty-third Annual Meeting.

PROF. S. B. GREEN, PRES.

This is the forty-third annual meeting of the Minnesota State Horticultural Society. I think the society was never in better condition than it is today, nor did it ever cover a wider or more important field of usefulness. This society started in an obscure corner of this state when this state was a very obscure portion of this great republic, and when this section of the state was looked upon as not only having no horticulture but scarcely having any agriculture, as being fit for nothing else than nomadic tribes of savages. That was about the idea when this society was started by a few enterprising, enthusiastic and energetic men, who were self-sacrificing and desired to do something for their fellow men, to make life more acceptable and more worth living, and as a result of their labors we see established in this state a system of horticulture that is helpful, that opens up new opportunities of livelihood to thousands of people, that not only contributes to the mere livelihood of the people, but to that which is artistic, beautiful, harmonious and home-like. In other words, this society in the forty-three years of its existence has developed in this section, in which it was not thought possible to have any horticulture, a system of horticulture from which you and I enjoy the fruits today with hundreds and thousands of others. It has made this great section up here—and its influence is not limited to Minnesota—it has made of Minnesota a country in which men delight to dwell, where the home is placed above everything else, and it has especially emphasized a beautiful rural life.

I am not going to talk to you long this morning, but I want to call your attention to a few matters we expect to take up during this session. Our society will be in session four days, and during that

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time we consider a wide variety of subjects. You will notice we take in not only the rose growers and market gardeners and such features, but also forestry and matters pertaining to the same, and we also take in the woman's auxiliary, the plant breeders' auxiliary and the florists' society. All these various subjects apply to conditions found in our rural communities, and we believe they will work together so that this great horticultural society will go on and extend its usefulness and become even a greater power for good than it has been in the past.

I congratulate you and we congratulate ourselves upon the large membership of this society, which has this year exceeded the three thousand mark. It has been the policy of this society for many years to do things in a broad way, and it has fathered societies in other states and aided them in developing their horticultural career.

As presiding officer of this meeting I want you to bear with me if I find it necessary to curtail some of the remarks in the interest of carrying out the program promptly. You will find our program is full of meat, and everything must go off on time, or somebody will be left out. One of the purposes for which I am in this position is to see that the program goes off in good shape. Our secretary has loaded the program full, and it must go off on time, and on that account it may be necessary for me to cut off debate occasionally.

So we are met together today to take up this annual program, and we ought to do it with interest and avidity and pleasure. Not only is this an occasion for promoting the development of horticulture, but of sociability, of kindliness, and we can not only learn a good deal about those things about which we desire to learn, but we can have a delightful association of kindred minds interested in rural pursuits. (Applause.)

Growing Fancy Strawberries. - I prepare the land well by deep plowing and liberal manuring, then mark out rows three and one-half ft. apart and set the plants two feet in the row. A runner is led out on each side of the plant, thus making a continuous row. The next runners are led out on each side of the row about eight to ten in. apart and made to take root by placing a small lump of soil on them. After the row is filled in this manner all runners are kept cut off. This makes the plants from eight to twelve in. apart, which gives them plenty of room to develop into strong crowns that will set plenty of fruit buds. It also gives about one and one-half ft. space between the rows, which is enough room for the pickers.

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Annual Report, Executive Board, 1909.

WYMAN ELLIOT, CHAIRMAN.

The executive board has had two meetings during the past year, December 14th, 1908, and June 26th, 1909. A quorum was present at the December but not at the June meeting. December 4th, 1909, the records of the meetings of the past year were read and the books and vouchers of the secretary examined and approved; we found the financial status of our society was in fine condition.

The board considered the propriety of selecting a lot for an horticultural building to be used as a permanent home, but found, under the existing laws of our state, unless such a building was used exclusively for horticultural purposes it would be subject to taxation and decided it was not advisable to purchase at the present time.

Your Board has been assisting the Forestry Board twenty-five dollars ($25.00) per month towards publishing the Minnesota Forester.

Our membership has overreached the three-thousand mark with a good prospect of further increase in numbers.

Our limited supply of reports will soon be exhausted, and we shall be unable to supply all the members with the reports they are entitled to according to our constitution and by-laws, and some provision must be made to make up this deficit. The printing of one thousand extra horticultural reports for two years was secured through an appropriation from the last legislature, and at the next session we shall be obliged to ask for an appropriation for printing a greater number if our membership increases in the future as it has in the past. Horticultural education among the masses is a necessity, and there seems to be no better means of advancing horticultural interests than through the distribution of our Minnesota Horticulturist and the yearly reports.

Horticultural experimentation is on the increase among our members, and the reports from the several trial stations are showing good results.

The new horticultural station at Zumbra Heights is progressing rapidly in its work of developing new fruits, and our members should visit this trial station and see what is being done to improve the horticultural conditions of our state.

Many of our members are entering the new seedling contests, and many new seedling apples, plums and other fruits of some commercial value are being sent, for examination, to the seedling committee; many of these seedlings are inferior in size, color or qualities that go to make up a valuable commercial fruit, yet they fill a very

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good place in many of our homes for sauce, pickles and preserves. If your favorite seedling does not receive a favorable recommendation from the seedling committee, do not be discouraged but keep on planting seeds, and the chances are very good that you will some time succeed in producing a valuable fruit.

To produce a fine crop of fruit is very encouraging to all growers, but unless the marketing is properly done the profit derived is not what it should be. Many of our members can produce quantities of good fruit but lack knowledge as to preparing it in an attractive manner for market, and we offer the suggestion that suitable premiums be offered for an exhibition in packing fruit at our next winter meeting by expert packers who thoroughly understand the methods of picking, sorting, handling and packing, to illustrate this most important part of receiving fair returns for the production and sale of our fruits. The day has gone by when any old basket, barrel or crate will answer for marketing fruits. Neat, clean packages, filled with well handled fruit, will command a much better price than the same fruit in the old package put up in a slovenly manner, thus giving the grower greater returns.

In closing I desire to make mention of the passing on of my friend and our brother co-worker Truman M. Smith, who was one of the early, enthusiastic horticulturists of our society. He was a very successful grower of the grape and other small fruits, and whatever he undertook was done in a thorough manner, whether it was preparing the ground, planting, cultivating or marketing; a splendid example of a progressive, successful horticulturist. He was president of our society from 1873 to 1879 and again from 1882 to 1885, and his annual addresses were very instructive, entertaining and full of sound horticultural advice.

I had a very pleasant visit with him during the state fair of 1909, discussing the many things of interest to old horticulturists and talking over the early days we had spent working for the common cause of horticulture in our state. He had lived in southern California for twenty-three years and on his return could very well contrast the improved fruit exhibit of today with those before he left for his southern home. It was a great surprise when, a few days after the closing of the fair, I learned of his death, caused by a severe cold contracted while in attendance one disagreeable, rainy day. I can add no more fitting tribute to his memory than that he was always an enthusiastic, progressive horticulturist.

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Secretary's Annual Report, 1909.

A. W. LATHAM, SECRETARY.

The society is certainly at high water mark in all branches of its service and in every feature of its work. With such a large and growing membership, with an increase in interest along all horticultural lines in the state, with the immense plantings of nursery stock, the development of commercial orchards and fruit gardens, the aroused interest in the direction of beautifying the home and adorning public grounds and streets—in all of which work the society may well claim some part—there is certainly large ground for self-gratulation.

This report will deal rather with statistical facts than other points of interest, as these other matters are largely brought out in the reports of the officers of the society which are being presented at this meeting.

The membership of the society for the year just closing totals 3,025, of which number 2,796 are annual members and the remainder (229) life members. A goodly number of life members have been added to the roll in the past year, as follows:

M. D. Hartman, St. Paul; S. A. Carlisle, Wyoming; C. E. Older, Luverne; G. R. Mills, Buffalo; Rev. R. F. Chambers, Redwood Falls; Wm. F. Wentzel, Crookston; A. E. Wentzel, Crookston; A. H. Gates, Rice; H. G. Knight, LeRoy; Johannes Paulson, Minneapolis; N. V. Spencer, Park Rapids; K. K. Peterson, Rothsay; Geo. Noren, Chisago City; C. C. Brink, Tracy; A. G. Loftness, Thief River Falls; Patrick H. O'Connors, North Calais, Vt.; J. A. Barsness, Kenyon; L. H. Voight, Hastings; Harold S. Wilson, Monroe, N. Y.; John W. Maher, Devils Lake, N. D.; L. E. Austin, Glencoe; Mrs. W. F. Webster, Minneapolis; Mrs. E. G. Bailey, Northome; E. A. Smith, Lake City.

Death has spared the ranks of our life membership during the past year, only two having passed away as far as knowledge has come to the secretary, namely: Mr. Thos. Lowry, of Minneapolis; and Truman M. Smith, of San Diego, Cal. Mr. Smith's death may be especially noted from the fact that he was for so many years a prominent member and worker in the society, having been president for eight years, from 1873 to 1879 and 1884 to 1886. After an absence of nearly a quarter of a century in California, bringing home for interment the body of his wife, we had the pleasure of meeting him for a few days at the state fair, and then, scarcely without warning, he passed away, and his remains were laid beside those of his wife.

The society is under obligations to its members to a large degree, including especially the lecturers on horticulture at the farmers' insti-

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tutes, in securing new members for the membership roll the past year, there having been brought to the roll 1,192 names as the result of this service. In most cases premium books were given to members for this service, and the amount expended for this purpose is approximately $350. Of this total the farmers' institutes contributed to the membership roll nine hundred and four names, in each case giving to the new member the premium book that the lecturer would be entitled to for securing the new member. A large part of the expense of these premium books is connected with this work at the farmers' institute. Attention is here specially called to the liberal premium list of valuable horticultural books offered to our members for this class of service. This list is published in the little folder which is sent out very freely through the nurserymen of the state, with the membership tickets of the society and distributed at the farmers' institutes, so that they come into very many hands. Forty-five thousand of these folders were printed and distributed the past year.

While the membership roll is steadily growing as a result of this manifold service, increasing a little year by year, the society would add much more rapidly to its strength if a larger proportion of the new members could be retained upon the permanent roll, and it is suggested that those who secure new members should have this in thought and endeavor to secure also their renewal for the succeeding year, so that they may be with the organization long enough to become more fully interested in its work.

A larger number than usual availed themselves of the offer of premium plants, which we are enabled to send out through the kindness of the officials of the State Experiment Station. There were 919, not including probably forty of the life members, to whom these premiums were sent this year. While this is a source of considerable expense to the society, we feel that the increased interest in the work of the organization fully warrants this expense and trouble, and that the plan, though it was adopted with some question as to its utility, has worked out to most excellent advantage.

Some of the most valuable reports that are made by the officers of the society are the annual reports of the vice-presidents. With one exception all of the vice-presidents last year made these reports, and some of them were prepared with great care, making full use of the circular matter sent to them for distribution throughout their respective districts in the securing of the needed information for the reports. The superintendents of trial stations have also served the society well in a similar way, there having been received from the fifteen superin-

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tendents eleven reports for the annual meeting and twelve reports for the summer season. These trial stations have been the source of very light expense to the society, the work that is performed being done without remuneration to the superintendents and usually without expense to the society for materials, the exception to this being the orchard station at Owatonna, which is supported by the state and is doing an excellent service in bringing into fruiting the large amount of orchard material gathered together by the late E. H. S. Dartt. The State Fruit Breeding Farm at Excelsior can hardly be called a trial station of the society, though it exists by virtue of the effort of the society to secure it, and it is closely allied with the society in its work. The reports of its superintendent and also of the examining committee are specially commended to our members.

There are in existence now eleven auxiliary societies, which I will not here name, the list being found on page eight of the program of this annual meeting. These societies together aggregate 404 members. Places for them on the program of this annual meeting have been found in some part. We look upon these additions to our ranks as being of far greater value than simply in adding so many more members to our numbers. They represent organizations that are doing special work, and by affiliating with the state society give to each a mutual increase of strength in the accomplishment of the special service undertaken. On account of a number of applications last summer from those interested in the organization of local societies, a constitution was prepared and printed ready for distribution to any who may desire to look further into this matter. There are many localities where undoubtedly there are enough self-sacrificing horticulturists—and it requires some of this kind to organize and keep alive such a local association—and where it is possible to do this it will be found a real advantage to the community. The secretary stands ready to assist in such work to the extent of his ability.

The Plant Breeders' Auxiliary is not an auxiliary society in the sense that most of the others are, having no membership fee and being composed of members of the state society who are engaged in any way in growing from seed new plants, etc.—in other words, originating new varieties. Members who are not already belonging to the Plant Breeders' Auxiliary and are growing seedlings of any kind are urged to place their names in this roll. At present there are 245 members in the Plant Breeders' Auxiliary, of which J. M. Underwood is president and Clarence Wedge is secretary. All the seedling contestants are eligible to this membership, and at present there are (referring to the one contest for seedling apples for which $700 is offered, $100 a

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year) 339 entries already registered. There is still opportunity for additions to this list, as it is by no means too late to plant seed which shall grow trees that will bear fruit in time still to become contestants for these awards. The secretary hopes to have apple seed suitable for this purpose to send out a little later in the season. During the past year there was sent out 183 packages of such seed, and many of the entries which came in the past year were from those who received this seed. All of the members are urged to save and plant seed from any choice apples available within the limits prescribed without looking to the secretary for it. Full particulars of this contest can be had upon application to this office.

There were published this year to be bound into book form 3,000 volumes of the report of this society, and from 3,100 to 3,700 monthlies were published during the various months of the year. This total amount is still in excess of what is being paid for by the state even, after taking into consideration the additional appropriation of $500 for 1,000 extra volumes which was made by the last state legislature. We asked this legislature for 2,000 additional copies, the appropriation to be made perennial. They served the horticultural society as they did most interests by cutting the amount down one-half, and then the appropriation is only to run for two years, so that we have this matter of an increase in our printing appropriation to take up again at the next session of the legislature.

Not enough bound volumes were in the office this year to supply the membership. As some do not care for it, a card was sent out asking the members if they desired the report, and if they did whether they had complied with the regulation requiring them to distribute the magazines of the previous year before receiving the report. By this means probably a larger number of our magazines than usual was distributed and not so many reports called for, which made it practicable for us to get through the year and take care of the exchanges with other societies that should be made.

Delegates were sent last year to the various annual meetings of the North and South Dakota, Manitoba, Wisconsin, Northeastern Iowa and the Iowa state societies, and there were present at our annual meeting delegates from all of these societies except from the Iowa State Society, from which no delegate was present either last year or year before last. It should be our endeavor and is to retain the most fraternal and intimate relations with all other horticultural societies, at least all the societies that touch our state. To go beyond this would incur a larger expense perhaps than the society would be war-

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ranted in making. Besides the above a delegate was sent to the biennial meeting of the Pomological Society in Ontario last September.

A steadily increasing amount is being paid for premiums at both our winter and summer meetings, the amount of premiums paid at the winter meeting a year ago being $305.40, and last summer being $152.25. It seems worth while to encourage to the utmost these exhibits, and especially a large exhibit of apples at the winter meeting, as the fruit growing regions of the Northwestern states are now being advertised by exhibits of splendid apples in our cities to that degree that it would make it seem as though the state of Minnesota was not raising fruit of this kind, and it was necessary to send abroad for it to make a respectable exhibit. The show of apples we have down stairs at this time does not warrant any such assumption.

On the program now in progress there are 104 names of persons who are taking some part. The effort is made by our executive officers to popularize this program. While a few of the experts are called upon for that measure of instruction in the arts of horticulture which we all appreciate and most of us need, yet it is thought well to call into this service largely the rank and file of the membership. Let us tell each other's experiences in our own way and discuss together the problems that are presented to us and often perplex us. The variety in our program, it will be seen, is very great, and the range of topics it covers includes the whole scope of horticultural interest.

A few volumes have been added to our library this year, a list of which appears on one of the back pages of the annual report for 1909. It is enough to fill the library shelves of the office to overflowing and again remainds us that we are in pretty limited quarters, where the office is remaining probably only on account of the inertia of the secretary. Card indexes of the library, reports of the society, horticultural bulletins, etc., commenced a year or two since, have all been completed and are available for the purposes of the membership. We have indeed a valuable library, not as much used as it will be at some time in the future, but one of the most important features of the society's work.

The fruit exhibit at the state fair is in a measure a part of the work of the society, and one in which the secretary is especially interested as superintendent of that department. In the past year the high standard of these exhibits has been maintained. Thousands of plates of apples, plums and grapes have filled to overflowing the space allotted. More fruit than ever before was shown in the county exhibits, and it is certainly high tide also for horticulture at the state fair. While we rejoice in this, yet there is a measure of sadness in it for

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many of us as we recall those who for so many years held up bravely this work during the earlier days of the society and made the exhibitions what they were. John S. Harris, Wm. Somerville, E. H. S. Dartt, Mr. Jordan, Wm. Oxford, and a long list of others, whose faces and forms memory brings clearly to us, have ceased their service with us, but their places are well taken by the younger members of the society, and the good work goes increasingly on.

Secretary's Financial Report for 1909.

A. W. LATHAM, SECY.

Receipts—

Balance on hand	$374.33
Life membership fees	240.00
Books sold	79.25
Banquet tickets sold	111.00
Advertising in magazine	291.32
Gideon Memorial Fund	5.00
Cuts sold	6.10
Minnesota State Fair, postage, etc.	20.00
Interest of deposit in Security National Bank	97.50
Annual Membership Fees, 1908	1.00
" " " 1909	2,582.00
" " " 1910	248.00
Sundries	5.01
Total	$4,060.51

Expenditures—

Postage	$469.91
Express	76.76
Expenses Annual Meeting, 1908	250.64
" " " 1909	16.88
" Trial Stations	23.57
" Vice-Presidents	6.66
" Delegates	156.61
" Summer Meeting, 1909	13.65
Discounts on Membership Fees, 1909	303.25
Printing	196.46
Office Supplies	14.11
Deposit Hennepin Co. Bank	400.00
Insurance, Library	8.00
Reporting Annual Meeting	163.00
Examining Books	10.00
Printing Minnesota Forester	312.30
Books for Library	15.00
Plant Premiums	51.90

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Office Rent	240.00
Banquet	155.00
Officers' Salaries	95.00
Premium Books	349.47
Secretary's and Treasurer's Bonds	21.00
Assistance in Office	481.00
Gas	2.57
Telephone	35.65
Sundries	24.54
Balance	167.58
Total	$4,060.51

General Statement—

1908		
Dec. 1	Balance in Hennepin County Savings Bank	$1,432.42
1909		
Apr. 2.	Deposited	400.00
Dec. 1.	Interest, to date	57.81
	Total	$1,890.23
1909		
Dec. 1.	Balance in Society Treasury	4,128.03
	Balance with Secretary	167.58
	Total	$6,185.84

Annual Report of Treasurer, 1909.

GEO. W. STRAND, TAYLOR'S FALLS, TREAS.

1908 RECEIPTS.

Dec. 1st.	To balance on hand	$4,060.68	
"	Receipts, secretary's office June 20 to Nov. 27	714.13	
1909			
Feb. 15th.	State treasurer, semi-annual allowance	1,250.00	
Aug. 17th.	State treasurer, semi-annual allowance	1,250.00	
June 23rd.	Receipts, secretary's office Nov. 27 to June 23	3,061.97	
Dec. 1st.	Receipts, secretary's office, June 23 to date	835.96	
	Total		$11,172.74

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1908. DISBURSEMENTS.

Dec.	1st.	Order No. 174, A. W. Latham, expenditures, secretary's office June 20 to Nov. 27, 1908	$714.13
"		Order 172, A. W. Latham, 4th quarter salary, 1908.....	375.00
1909.			
Mar.	2nd.	Order 175, A. W. Latham, 1st quarter salary, 1909	400.00
May	25th.	Order 176, A. W. Latham, 2nd quarter salary, 1909	400.00
Sept.	1st.	Order 178, A. W. Latham, 3rd quarter salary, 1909.....	400.00
Dec.	1st.	Order 179, A. W. Latham, 4th quarter salary, 1909.....	400.00
June	23rd.	Order 177, A. W. Latham, expense, secretary's office, Nov. 27 to June 23	3,061.97
Dec.	1st.	Order 180, A. W. Latham, expense, secretary's office, June 23 to date	835.96
Dec.	1st.	Order 181, premiums annual meeting, 1908	305.40
Dec.	1st.	Order 182, premiums summer meeting, 1909	152.25
		Balance on hand	4,128.03
		Total	$11,172.74

The society funds in the hands of the treasurer are in the Security National Bank as follows:

On open deposit	$ 628.03
Certificate of deposit	3,500.00
(At 3 per cent due Feb. 17th.)	
Total	$4,128.03

I have made cuttings of currant and gooseberry bushes from September to April, and had about equal success in rooting them. If cut early in the fall and buried under the soil at once they will callous over where cut, and sometimes start roots, and will start growing as soon as set out in the spring.

I would not make the cuttings when the wood is frozen, but during a mild spell. Then they should be buried at once about a foot deep in the soil, a bunch of litter thrown over them, and left until the currants start into growth in the spring, when they should be set out.

To make a good job of it I would have the cuttings about a foot long, and I would set them about eight inches deep in the soil, then mulch them with straw or coarse manure, covering a space around the cutting about eighteen inches square. Treated in this manner I have not lost one per cent.

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Award of Premiums, Annual Meeting, 1909, Minnesota State Horticultural Society.

ROSES.

Bride	L. S. Donaldson, Minneapolis	First	$2.50
Richmond	" "	Second	1.50
Bridesmaid	" "	First	2.50
Killarney	Will Bros., Minneapolis	First	2.50
Richmond	" "	First	2.50

GRAPES.

Massasoit	P. H. Perry, Excelsior	First	.75
Worden	" "	First	.75
Concord	" "	First	.75
Delaware	" "	First	.75
Moore's Early	" "	First	.75
McPike	" "	First	.75
Moyer	" "	First	.75
Rogers 44	" "	First	.75
Delaware	Geo. W. Strand, Taylors Falls	Second	.50
Agawam	" "	First	.75
Campbell's Early	P. H. Perry, Excelsior	First	.75
Janesville	" "	First	.75

GUST JOHNSON, Judge.

SINGLE VARIETIES OF APPLES.

Wolf River	A. Brackett, Excelsior	Third	.30
Patten's Greening	Dr. W. B. Pineo, Minneapolis	Second	.40
Wealthy	" "	First	.50
Hibernal	Geo. W. Strand, Taylors Falls	Third	.30
Christmas	" "	First	.50
Charlamoff	" "	Third	.30
Peerless	" "	Second	.40
Lowland Raspberry	" "	First	.50
Malinda	" "	Third	.30
Walbridge	G. A. Anderson, Renville	Second	.40
Talman Sweet	" "	First	.50
Antonovka	Thos. Redpath, Wayzata	First	.50
Brett	" "	First	.50
Haas	" "	Third	.30
Lord's 'L	" "	Third	.30
Jewell's Sweet	" "	First	.50
Jewell's Winter	" "	Third	.30
McMahon	" "	First	.50
University	" "	First	.50
Utter	" "	First	.50
Peerless	" "	Third	.30
Malinda	Henry Husser, Minneiska	Second	.40
Fameuse	" "	Second	.40
Superb	W. J. Tingley, Forest Lake	Second	.40
Milwaukee	" "	First	.50
Yahnke	" "	First	.50
Anisim	S. R. Spates, Wayzata	Third	.30
Charlamoff	" "	First	.50
Duchess	" "	First	.50
Hibernal	" "	Second	.40
Okabena	" "	Second	.40
Peter	" "	Second	.40
Peerless	" "	First	.50
Wealthy	J. Flagstad & Sons, Sacred Heart	Second	.40
Gideon	D. T. Wheaton, Morris	Third	.30
Tetofsky	" "	Third	.30
Ben Davis	H. H. Pond, Minneapolis	First	.50
Brett	P. H. Perry, Excelsior	Third	.30
Borovinca	" "	Second	.40
Tetofsky	" "	First	.50
Yellow Transparent	" "	Second	.40
Arisim	" "	Second	.40
Duchess	" "	Second	.40
McMahon	" "	Second	.40
Patten's Greening	" "	First	.50
Peter	" "	First	.50
Wolf River	Fred Zuercher, Excelsior	Second	.40
Wealthy	E. J. Longyear, Excelsior	Third	.30

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Ben Davis	Jewell Nursery Co., Lake City	Second		.40
Brett	" "	Second		.40
Christmas	" "	Second		.40
Fameuse	" "	First		.50
Gideon	" "	First		.50
Giant Swaar	" "	Second		.40
Gilbert	" "	First		.50
Golden Russet	" "	Second		.40
Grundy	" "	First		.50
Iowa Beauty	" "	Second		.40
Jewell's Sweet	" "	Second		.40
Jewell's Winter	" "	First		.50
Judson	" "	First		.50
Lord's L	" "	Second		.40
Nelson	" "	First		.50
Newell's	" "	Second		.40
Plumb's Cider	" "	First		.50
Rollins' Prolific	" "	Second		.40
St. Lawrence	" "	Second		.40
Superb	" "	First		.50
Utter	" "	Third		.30
White Pigeon	" "	Second		.40
Duchess	" "	Third		.30
Hibernal	" "	First		.50
Malinda	" "	First		.50
N. W. Greening	" "	Second		.40
Okabena	" "	First		.50
Peter	" "	Third		.30
Wolf River	" "	First		.50
Anis	J. A. Howard, Hammond	First		.50
Anisim	" "	First		.50
Antonovka	" "	Second		.40
Borovinka	" "	Third		.30
Christmas	" "	Third		.30
Fameuse	" "	Third		.30
Gideon	" "	Second		.40
Giant Swaar	" "	First		.50
Gilbert	" "	Second		.40
Golden Russet	" "	First		.50
Grundy	" "	Second		.40
Hutchins	" "	First		.50
Iowa Beauty	" "	First		.50
Jewell's Sweet	" "	Third		.30
Jewell's Winter	" "	Second		.40
Judson	" "	Second		.40
Lord's L	" "	First		.50
Nelson	" "	Second		.40
Newell	" "	First		.50
Peach	" "	First		.50
Plumb's Cider	" "	Second		.40
Red Wine	" "	Second		.40
Red Astrachan	" "	First		.50
Rollins' Prolific	" "	First		.50
St. Lawrence	" "	First		.50
Salome	" "	First		.50
Talman Sweet	" "	First		.50
Tetofsky	" "	Second		.40
Utter	" "	Second		.40
University	" "	Second		.40
Walbridge	" "	Third		.30
Yahnke	" "	Second		.40
Yellow Transparent	" "	Third		.30
Charlamoff	" "	Second		.40
N. W. Greening	" "	Third		.30
Yellow Transparent	E. A. Farmer, Minneapolis	First		.50
Yahnke	W. A. Yahnke, Winona	Third		.30
Ev lyn	A. B. Lyman, Excelsior	First		.50
Ben Davis	A. Brackett	Third		.30
Scott's Winter	Fred Zuercher	First		.50
University	" "	Third		.30
McMahon	F. I. Harris for S. J. Evans	Third		.30
Walbridge	" "	First		.50
Haas	" "	Second		.40
Scott's Winter	" "	Second		.40
N. W. Greening	" "	First		.50
Patten's Greening	S. R. Spates, Wayzata	Third		.30
Borovinka	H. J. Ludlow, Worthington	First		.50
Haas	Jewell Nursery Co	First		.50
Longfield	" "	Second		.40

JNO. P. ANDREWS, Judge.

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PECKS OF APPLES.

Wealthy	Geo. W. Strand,	Taylors Falls	.47
Patten's Greening	"	"	.39
Brett	Thos. Redpath,	Wayzata	.75
N. W. Greening	Henry Husser,	Minneiska	.74
Longfield	"	"	.74
Wealthy	E. F. Pabody,	Excelsior	.66
University	"	"	.74
Wealthy	S. R. Spates,	Wayzata	.63
N. W. Greening	"	"	.73
Wealthy	J. Flagstad & Sons,	Sacred Heart	.64
McIntosh Red	"	"	.72
Peerless	"	"	.61
Longfield	"	"	.60
N. W. Greening	J. O. Weld,	Mound	.48
Wealthy	"	"	.60
N. W. Greening	P. H. Perry,	Excelsior	.78
Okabena	"	"	.65
Duchess	"	"	.63
N. W. Greening	Fred Zuercher,	Excelsior	.77
Wealthy	"	"	.78
Wealthy	F. J. Longyear,	Excelsior	.76
Wealthy	Jas. F. Harrison,	Excelsior	.71
Okabena	Jewell Nursery Co.,	Lake City	.65
Duchess	"	"	.58
Wealthy	"	"	.77
N. W. Greening	"	"	.77
Suzoff Winter	"	"	.73
Thomoson No. 29	"	"	.63
Thompson No. 38	"	"	.63
Thompson No. 46	"	"	.54
Thompson No. 25	"	"	.55
Superb	"	"	.73
Patten's Greening	"	"	.39
Christmas	"	"	.57
Hibernal	"	"	.49
Gideon	"	"	.71
Malinda	"	"	.78
Borsdorfer	"	"	.41
Peerless	"	"	.40
Jewell's Sweet	"	"	.69
Patten's Greening	J. A. Howard,	Hammond	.55
Malinda	Geo. W. Strand,	Taylors Falls	.74
Lord's L	W. A. Yahnke,	Winona	.56
Fosberg	Jewell Nursery Co.,	Lake City	.67
Duchess	J. A. Howard,	Hammond	.50
Wealthy	H. J. Ludlow,	Worthington	.69
Seedling	Mrs. M. A. Knowles,	Excelsior	.69

CHAS. HARALSON, Judge.

BUSHEL BOXES OF APPLES.

Jewell's Winter	Jewell Nursery Co.,	Lake City	2.50
Wealthy	J. A. Howard,	Hammond	2.78
N. W. Greening	"	"	2.18
Superb	W. J. Tingley,	Forest Lake	2.25
Lord's L	W. A. Yahnke,	Winona	1.25
Wealthy	J. W. Patten,	Long Lake	2.93
N. W. Greening	F. I. Harris for S. J. Evans,		2.50
Seedlings	A. Brackett,	Excelsior	2.50
Wealthy	Geo. W. Strand,	Taylors Falls	2.71
Wealthy	Thos. Redpath,	Wayzata	2.78
Wealthy	J. Flagstad & Sons,	Sacred Heart	2.75
McIntosh Red	"	"	2.31
Wealthy	P. H. Perry,	Excelsior	2.71
Scott's Winter	"	"	2.50
Wealthy	Fred Zuercher,	Excelsior	2.78
N. W. Greening	"	"	2.29
Wealthy	E. J. Longyear,	Excelsior	2.78
N. W. Greening	"	"	2.37
Wealthy	Jewell Nursery Co.,	Lake City	2.78
Malinda	"	"	2.35

DEWAIN COOK, Judge.

COLLECTION, TEN VARIETIES OF APPLES.

Collection, ten varieties	Geo. W. Strand,	Taylors Falls	3.15
Collection, ten varieties	S. R. Spates,	Wayzata	Third 3.85
Collection, ten varieties	D. T. Wheaton,	Morris	.50
Collection, ten varieties	P. H. Perry,	Excelsior	Second 4.15
Collection, ten varieties	Jewell Nursery Co.,	Lake City	First 4.45
Collection, ten varieties	J. A. Howard,	Hammond	3.70

A. R. KOHLER, Judge.

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COLLECTION OF TOP-WORKED APPLES.

Collection, top-worked	Geo. W. Strand, Taylors Falls	First		4.75
Collection, top-worked	W. J. Tingley, Forest Lake	Second		4.35
Collection, top-worked	Seth. H. Kenney, Waterville			3.00
Collection, top-worked	John Bisbee, Madelia			2.75
Collection, top-worked	J. A. Howard, Hammond			4.10
Collection, top-worked	A. J. Philips, West Salem, Wis	Third		4.15
Collection, top-worked	O. W. Moore, Spring Valley			1.90

A. R. KOHLER, Judge.

EARLY WINTER SEEDLING APPLES.

		Score.	
No. 6	J. A. Howard, Hammond	65	2.09
	A. Brackett, Excelsior	85	2.74
	A. J. Philips, West Salem, Wis	80	2.57
	Martin Stoa, Albert Lea	75	2.42
	Jewell Nursery Co., Lake City	85	2.73
	J. S. Decker, Austin	85	2.73
	J. A. Howard, Hammond	70	2.25
	" "	78	2.52
	" "	78	2.52
	Henry Lillie, New Ulm	90	2.89
No. 5	A. J. Philips, West Salem, Wis	92	2.95
No. 5	J. A. Howard, Hammond	70	2.25
No. 20-A	T. E. Perkins, Red Wing	85	2.73
	Thos. Redpath, Wayzata	75	2.42
	A. L. Brown, Baraboo, Wis	80	2.57
	Martin Stoa, Albert Lea	50	1.62

CLARENCE WEDGE,
WYMAN ELLIOT, Judges.

LATE WINTER SEEDLINGS.

No. 7	J. A. Howard, Hammond	70	1.92
No. 5	" "	65	1.80
	Fred Zuercher, Excelsior	85	2.32
	M. Olson for H. M. Gippe	82	2.25
	Aug. Klammer, Chaska, Minn	70	1.92
	Mrs. M. A. Knowles, Excelsior	80	2.18
	Thos. Redpath, Wayzata	78	2.12
No. 32	T. E. Perkins, Red Wing	75	2.04
No. 46	" "	85	2.32
	H. H. Pond, Minneapolis	84	2.29
No. 72	T. E. Perkins, Red Wing	86	2.35
No. 108	" "	80	2.18
No. 1-A	" "	75	2.04
	G. A. Anderson, Renville	80	2.18
	M. Oleson, Montevideo	87	2.37
	J. M. Broome, Mankato	85	2.32
	H. H. Pond, R. No. 1, Minneapolis	60	1.65
	A. L. Brown, Baraboo, Wis	80	2.18
	John Bisbee, Madelia	75	2.05
	Martin Stoa, Albert Lea	60	1.65
	Jewell Nursery Co., Lake City	80	2.18
	J. A. Howard, Hammond	87	2.37
	" "	75	2.05
	" "	90	2.65
	A. J. Philips, West Salem, Wis	75	2.05
	Miss H. Burley, Minnesota City	80	2.18
No. 200, or Perfect	A. B. Lyman, Excelsior	90	2.60
No. 6	J. A. Howard, Hammond	70	1.92

CLARENCE WEDGE,
WYMAN ELLIOT, Judges.

NUTS.

Walnuts	Henry Husser, Minneiska	First	.50
Butternuts	" "	Second	.40
Hickory Nuts	" "	First	.50
Butternuts	D. T. Wheaton, Morris	First	.50

JOHN R. CUMMINS, Judge.

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Annual Meeting, 1909, Iowa State Horticultural Society.

JOHN HAWKINS, MINNEAPOLIS, DELEGATE.

The meeting of the Iowa State Horticultural Society was held at the Capitol, in Des Moines, December 7th, 8th and 9th. Your delegate had the pleasure of renewing old acquaintances and wishes to acknowledge the many courtesies extended him by the Iowa society.

The meetings, though not as well attended as our meetings in Minnesota, were very interesting. The papers read were all presented by able men who were well acquainted with the subjects on which they spoke. The almost complete absence of women and young men at the meetings could not escape the notice of any one accustomed to attending our Minnesota society.

The fruit exhibit displayed in the rotunda of the capitol was very fine. About 1,800 plates and several bushel boxes of fine apples were exhibited, besides about seventy-five plates of nuts, pears and other fruits.

One of the first subjects for discussion was spraying. Without exception all the apple growers were in favor of thorough spraying, using lime-sulphur, arsenic of lead and bordeaux, spraying four times. Several spoke of the oyster shell scale as being the worst enemy to overcome, even worse than the San Jose scale. The subject of picking and marketing apples was also fully discussed. Many were in favor of careful grading and boxing of good apples rather than putting them up in barrels. Boxed apples brought a much better price and more than paid for the extra expense of boxing.

An interesting stereoptican lecture was given by Prof. A. T. Erwin on "The Care of Public and Home Grounds." Prof. Erwin cautioned against the scattering of shrubs about the lawn, advising planting them in groups on the sides, corners and back of lots, leaving open spaces of green grass. He also stated that the best background for perennials was a border or group of shrubs.

Dr. Samuel Bailey gave an interesting paper on "Apples." Dr. Bailey treated this subject from a medical point of view. The doctor stated that the apple was the most healthful of fruits and should be more freely used. He also made the statement that if people having an appetite for intoxicating liquor would eat plenty of apples it would greatly lessen their appetite for liquor.

The subject of placing heaters in orchards to prevent frosts at the blooming time was one of the most interesting. Several present had tried this method with splendid success. One of the apple growers said he had twenty acres of apple orchard and tried it on ten

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acres, receiving a bumper crop on these ten acres, while on the other ten he had almost a total failure. It was recommended to use fifty to 125 pots or heaters per acre, each pot holding from five to seven quarts of fuel oil, which would burn from three and one-half to seven hours, after which they needed refilling—if the temperature demanded. The fuel oil can be purchased at about three cents per gallon in tank lots. By using the heaters the temperature can be raised from seven to fifteen degrees, depending upon the number of heaters placed in the orchard.

Annual Meeting, 1909, Northeastern Iowa Horticultural Society.

O. W. MOORE, SPRING VALLEY, DELEGATE.

The attendance at the meeting was not as full as we would have liked to have witnessed, caused no doubt by one of the worst snowstorms in our memory for the month of November. Charles City is well located on the Cedar River and seems to be a pretty live town for its size. They have a concrete bridge and dam across the river, from which power is obtained to light the city and also for manufacturing purposes. Their railroad communications are good, the C. M. & St. P. Ry. running east and west, and the I. C. Ry. running north and south. The meeting was called to order at 9:30 a. m., on Tuesday, November 16, by the president, Rev. C. H. True. The papers read were generally short and to the point, according to the wishes of the secretary. One written by the Hon. Eugene Secor, of Forest City, on the "Possibilities in Seedling Production" was a scholarly effort, worth much along the lines of the present day seedling interests in Iowa and the Northwest.

A paper written by E. Blakeman, of Decorah, Iowa, on some of the benefits derived from horticultural societies was well received and contained many points well worth remembering; also one by Prof. L. M. Robbins setting forth the utility of manual training in our public schools.

Your delegate with others, by invitation, visited Mr. C. G. Patten's experimental grounds, but the weather conditions were not favorable for an intelligent report, as the ground was covered with snow and a cold northwest wind blowing. The Minnesota horticulturists all have heard of and some of them know Mr. Patten, but very few if any of them realize the extent of his work and cannot do so without looking over his grounds for themselves. It is to be hoped that he may be spared for many years yet, as every year now adds to the value of his efforts along the lines of his experimental work.

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What Can Be Done with 1,000 Evergreens.

A. K. BUSH, HORTICULTURAL EDITOR "NORTHWESTERN AGRICULTURIST," MINNEAPOLIS.

I shall attempt, in this brief paper, to show our people examples of what has been accomplished in the Northwest by planting evergreens in considerable numbers about the home and farmstead. What has been done can be repeated with greater ease and assurance than blazing the way through an unknown forest of possibilities. There are at this time thousands of people living in the Northwest who maintain, with a good deal of persistence, that evergreens have no place on the exposed, wind swept prairies in Minnesota and the Dakotas. They refer to plantings that have been discouraging failures.

Orchard and Scotch pine shelter belt on place of A. K. Bush, at Dover, Minn.

We shall mention a few examples that have come within our observation during recent years, while we have traveled quite extensively in the territory named and with our eyes open for successful plantations of trees, especially evergreens, on the open prairie of our Northwest country.

While traveling with the State Farmers' Institute in southern Minnesota, a few years ago, we visited the farm of a Mr. Frank, who at that time owned something like 1,600 acres of farming lands near LeRoy, Mower county. About twenty-five years previous to our visit to his farm he purchased 1,000 Norway spruce of small size from a local nursery that was closing out all stock at "bargain counter" prices. The low price persuaded Mr. Frank to buy the trees rather than an assurance of success, which at that time was questioned by many of the nurserymen. The 1,000 spruce trees were all planted in rows,

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closely set about the buildings on the farm and along the driveways leading to the public highway, also about the orchard and gardens. They were planted with intelligent care and given timely attention during the growing season, which was evident, because the trees, with very few exceptions, were unusually handsome in appearance and had made a splendid growth. They were nearly forty feet high, with a dense, broad growth at the ground, which made them a most desirable shelter for his buildings, yards and stables on the farm. Mr. Frank entertained many visitors who came from far and near to see the stately rows of evergreens and learn the secret of his success with them on the prairie. The story was told in a few words: he bought good trees, planted them with care and gave timely, intelligent care during the growing season. Nature did the rest. A very conservative estimate of the value of the 1,000 evergreens to that farm, in money, would approach the $5,000 mark, and for the stockmen who could not afford to wait twenty-five years to grow the like of them they would be worth much more than the figure mentioned. This did not include the added comfort to the home and its surroundings, which cannot be estimated in dollars and cents.

The success of pioneer planters of evergreens has inspired many others to go and do likewise, until now extensive plantations are to be seen in almost every neighborhood.

The Evergreen Cemetery Association at Dover, Minnesota, purchased a tract of land for burial purposes, which was located on the sightly crest of a hill reasonably near the village. A landscape gardener was employed to design and lay out the grounds into lots, driveways and flower gardens. An experienced grower and planter of evergreens was engaged to decorate the proposed cemetery with trees of his selection. He used nearly 1,000 evergreens for the purpose, which, in accord with his contract, were given personal care and attention until well established. We now have a country cemetery that compares very favorably with the best managed burial grounds in the large cities. All of the trees are kept in a thrifty, well trimmed condition, the grounds are mowed every week to keep them sightly, and the ornamental sections are planted to flowers each spring. In fact, we have a cemetery, with its large number of stately evergreens, that is admired by all who see the grounds and at the same time is suggestive of an enterprising community. A generous planting of evergreens, in the beginning, was the inspiration that has kept the grounds beautiful in later years.

We have white pines planted on our farm in Olmsted county, Minnesota, about thirty-five years ago, that are now quite four feet

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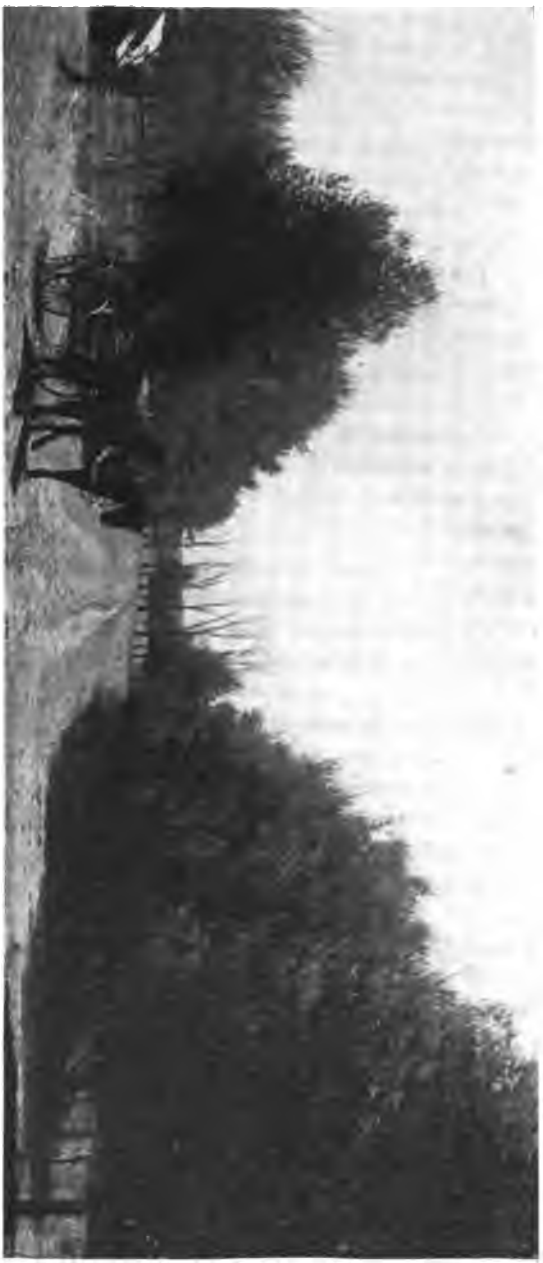

White pine hedge on south side of orchard, on farm of A. K. Bush, at Dover, Minn.

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in circumference, and would make saw logs scaling nearly 500 feet to the tree. If I had planted 1,000 white pines at that time for saw-logs instead of a shelter for the farmstead, the land and trees would be worth as much per acre as city lots.

Several years ago the writer proposed planting evergreens, especially the ornamental spruce, for Christmas trees. The proposition was ridiculed as the dream of an individual who might not be sane or sober. We can now refer to instances where selected spruce trees sold during the holiday season, last year, for Christmas trees at $5.00 each. They were for the family, hence were comparatively small trees, being less than ten feet, while the larger sizes for churches, halls, etc., brought $10 to $15 apiece. We submit the problem: What would 1,000 evergreens ten to fifteen feet be worth at the price named?

The seedsmen with whom we are at present associated find great difficulty in securing nursery grown evergreens sufficient to meet the demands of their Christmas trade. We believe this is true in all of the large cities in the country where evergreens do not grow wild in the woods. We have advised many of our friends to buy small seedling evergreens by the thousand and plant them in their gardens for use on their premises and to supply neighbors. We remember an instance where an investment of $2 in Scotch pine seedlings in a very few years returned us $50 in cash and several fine shelter belts for the farmstead.

Large evergreens are moved quite safely from an adjoining farm but cannot be shipped any distance without serious loss; hence, the necessity and demand for home grown trees. The local nursery that makes a specialty of growing and selling evergreens at farmers' prices is a public benefactor. We can refer to localities thus provided where nearly every farmstead in the neighborhood is sheltered with generous evergreen hedges and the orchard and garden made productive with handsome lawns and driveways. The selling value of farms in such a community is increased ten to twenty-five per cent, because their owners have been wise enough to plant evergreens by the thousand. Evergreens, like men and birds, thrive best when and where they are in company of their kind; hence the desirability of planting them in large numbers. A single evergreen on the lawn will struggle for an existence where 1,000 in a nursery row or planted in hedges will thrive like weeds—they shelter and encourage each other. Plant evergreens by the thousand next spring and reap, in the near future, a bountiful harvest in comfort, beautiful surroundings and dollars.

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A Theory of Pear Growing.

REV. JOHN B. KATZNER, SUPT. COLLEGEVILLE TRIAL STATION.

It required considerable effort on my part to determine myself to write this theory on pear growing. But considering that it is only a theory without any claim to the certainty of results, and also considering that it might prove true in its leading idea and become the key to the problem of pear growing in Minnesota, I present it to you for what it is worth. Should it prove a true theory by experiments, the problem would be solved; on the other hand should it be shown untenable, then let it go down like so many other blasted hopes and theories.

According to my theory two things are essentially necessary for pear growing in Minnesota: first, a hardy variety, and, secondly, the roots of the pear tree must go down below the frost line.

About the first point I have very little to say. Everybody knows that if ever pear growing becomes a fact in Minnesota it will be only the hardiest varieties that will succeed. Yet it might happen, that, if the second point should prove true, many varieties, which are now considered only half-hardy, would succeed in our state fairly well.

We do not consider it necessary to say more about the first point and will now give our attention to the all-important second part, namely, that the roots of the pear tree must go down below the frost line if we ever expect to raise pears in Minnesota.

The roots of the pear tree themselves demand this. Every pear seedling grows a long tap-root, penetrating deep down into the ground. If we prune the tap-root, the seedling will not throw out side roots similar to the apple seedling but will grow a few roots at the cut end, which will in an easy curve grow downward again. They penetrate into the ground deeper every year and go down to a considerable depth on a large tree. These roots not only anchor the tree firmly, but it is also their duty to furnish food and water in time of need, when the lateral roots for some reason are not able to do so. A living tree requires for its growth, development and transpiration very much water, and the pear tree is not exempt from this natural law. In summer and winter the roots have to be active and have to furnish the required amount of water. Now in summer there is no difficulty for the roots to get the necessary water supply when the roots are down but a few feet. But how is it in winter when the roots are entirely encased in frozen ground, when the dry, cold atmosphere acts upon the pear tree like a pump, drawing out the last bit of moisture. Will then the roots be able to furnish the required amount of water? No!

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The roots of many species of trees may be able, but the pear roots seem not to be able to do that. By nature they are designed to furnish water from a lower level of ground in time of need. If by pruning and culture the roots are forced to take their water supply from a higher level, they can do so in summer, but in winter, when they are entirely encased in frozen ground, their action to furnish water is impeded, they cannot supply the tree with this requisite for life, and, hence, the tree perishes. If on the other hand the roots go down below the frost line they will always—in winter, too—be able to supply the tree with the required amount of water, and so the tree, being of a hardy variety, will live in spite of winter's cold blast. Does this theory seem reasonable to you? Well, to me it does. Maybe a few facts will bring it home more forcibly.

Now what are the facts that led me to this unheard of theory? On page 174 of the Minnesota Horticulturist for 1909, Mr. G. W. Studley, of Cleveland, Minn., asked for "light or instruction on the pear question." He says: "I have been dabbling for a good many years with the pear problem. I failed to strike anything of any benefit at all, and I became entirely disgusted and threw the whole thing over. After a while there came up some sprouts from some of the trees I planted and which had died. Those sprouts seemed to withstand anything that came, and consequently I got some six or seven trees, and I have exhibited pears several times. I am very much interested in this subject, and if any one has anything to offer I would like to hear it." This statement of facts was given to the Minnesota Horticultural Society then in session. But the question remained unanswered, no light was seen, and no instruction given. In fact, it seems this problem could not be solved in a satisfactory manner. And yet how easy and natural is the solution, according to my theory.

Mr. G. W. Studley planted pear trees and experimented a good many years with them, but they froze every winter, or nearly so, and died to the snow line or the ground—because the roots were encased in frozen ground and could not supply water for the trees above ground. The dry, cold wind extracted all the moisture from the trees, and, hence, they died. But the roots were not killed, and they forced the remaining piece of healthy stem to grow again. This killing down to the snow line or ground in winter and growing again in summer kept on for several years. But while the trees grew a new stem upwards every year, the roots, too, kept on growing downward right along. By the time Mr. G. W. Studley gave up in disgust, the roots of the pear trees had reached down below the frost line. Now the part of the roots below the frost were not impeded in their action

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by an icy case of frozen ground and were now able to furnish water to the trees in winter as much as needed by the top. As a consequence, the trees, being otherwise hardy, did not freeze back any more, but lived, grew, developed to fine trees and bore fruit. Is not this explanation quite natural? How else could you explain this fact if not according to my theory?

Seedling pear, exact size.
Originated by H. Knudson, Springfield, Minn.

My own experience leads me to the same conclusion. Here are the facts. Ten years ago I got some pear seed from our late Mr. Chas. Luedloff. I raised about 200 nice pear seedlings. But the following winter, with forty below zero, root-killed every seedling, and the tops, though exposed to the cold, were sound except the last bud. I pulled them all up and threw them away. Two days later, acting on an afterthought, I grafted twelve of these seedlings on apple roots. They all grew, and after two years, when I transplanted them, they

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had grown their own roots again, and I cut away the apple roots, These pear seedlings were never root-killed again, but froze down to the snow line every winter. After three or four years some of them grew a very nice stem. I took out six of the twelve, heeled them in over winter and set them out in the orchard. Just by chance I planted them on a place where the snow would get about two feet and over deep. Four of these pear seedlings froze every winter again, showing that they were not hardy. But the other two seedlings never froze down to the snow line any more, they not even lost the terminal bud on the branches, and are now nine feet high. One especially is very hardy; last spring I cut off a branch three years old, and the wood was perfectly healthy. For an experiment I top-grafted it with four named but not quite hardy varieties. How will you explain this fact? According to my theory, it is just as simple as the preceding one. As long as the roots were encased in frozen ground in the nursery, they froze back every year, but as soon as the deep snow in the orchard kept the ground from freezing much, the roots were able to supply the required moisture for the top to keep it from freezing dry, and, hence, were not killed down to the snow line any more. As I said, I set six seedlings in the orchard, two are alive and healthy, the other four not being of sufficient hardiness constitutionally are about dead. Will these facts incline you to the belief that my theory is correct?

I have been told by an Austrian that young pear trees are not as hardy as apple trees, but when they get of some size they become hardier than the apple. This too can be explained the same way, and indeed the late Prof. Budd, of Iowa, in his report on Russian fruit culture says that good pears are grown further north in that country than good apples.

It is said that it is easy to raise pear seedlings to bearing size, but then they will fail. Well, is it not the same with the apple seedlings, and still we raise apples. This only proves that the seedlings are not of sufficient hardiness to bear fruit and still have enough vitality left to carry them safely through the winter.

I only regret that I have no more reliable facts at my disposal to still further corroborate the above theory. Nevertheless, I confidently believe that you are impressed with the idea, that there may be some truth in it. All we have to do now is to find out if it can be verified by actual trial. This might be done in the following manner. Get pear seed from the hardiest pears. If necessary, import the seed from central Russia or Manchuria. Grow your pear seed-

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lings a year or two. Then take them up and graft the whole roots with long scions of the hardiest kind, such as Mr. G. W. Studley has, and plant at once on the place where you want your future pear trees to stand. Mulch very heavily every winter to keep the ground from freezing much. If you find in the spring that your pear trees froze down to the snow line, cut them back to the healthy wood every time. When after five or six years the roots get down below the frost line, then according to this theory the freezing back will stop, and you can raise the sprouts to healthy bearing trees. Now lend a hand in testing this theory, and maybe we will ultimately be successful and also enjoy this delicious fruit—the pear.

The Origination of Plums by Cross-Fertilization.

H. KNUDSON, SPRINGFIELD.

(Originator of Compass Cherry.)

It is now several years since the planting of the first plum trees on my place, which were of the wild, or native, varieties, such as were growing on the river bottoms along the Big Cottonwood River here. During the ripening season the groves of these were searched for a number of years, and whenever a tree was found bearing better fruit than the ordinary it was marked and the spring following dug and transplanted to the garden. Later some of the cultivated varieties were added, and still later a few of the Japanese and other varieties. The trees from these plantings gave plenty of fruit, in fact more than the family cared for or could use, and some was sold to the neighbors and some to the stores. There was quite a difference in the size and quality of these plums, and some of the trees which gave the poorest fruit were discarded.

The planting of plum pits and raising of seedlings was started, the finest and largest fruit from the different trees being selected for planting, to see whether it would be possible to raise trees that might bear better and larger fruit. Hardiness and fruitfulness were all right, but quality and size of fruit not entirely satisfactory. The fruit that was gathered from the Japanese varieties, however, was finer in quality and much larger in size than any of the other varieties on the place, though the trees were not quite hardy enough and their crops not as regular nor reliable, and on account of this the selection for seed was made from the best of the natives.

The following spring the seedlings came up nicely, and in the fall of the same year more plums were selected and the pits of these also

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planted. This process was repeated for some years, and each season when new seedlings came into bearing they were carefully examined, many among them being found which differed widely from the others, and by looking over the fruit when ripe a tree now and then was found showing some improvement. This of course encouraged me to plant more seeds. More trees of the undesirable ones had to be removed to make room for the better seedlings, and in a few years I had a number of fairly good seedlings which suited me better in size and quality. A few of the very best among them were of fine quality and size, and these in some respects more or less resembled the Japanese plums. The trees from which these seeds were taken for planting were growing in close proximity to the trees of the Japanese and had been fertilized by their pollen.

Seeing that there was a possibility of getting better varieties by the raising of seedlings, the work was kept up. I didn't care to multiply varieties to be added to the list unless I had something better to offer, and I had only 75x150 feet in which to grow them, and the number of seedlings nearly covered this space. In the meantime I had heard and read about Mr. Burbank's plums, had seen and sampled some of the fruit which he sent me, and I soon had some of the varieties growing on my place, and the collection comprised the best varieties I knew of. These, such as could be fruited here and the best of those already originated on the place, were cross-fertilized by hand each year during the period of blossoming whenever the weather was favorable for the work and the time could be spared. Some of Mr. Burbank's held out for a season or two, some longer, a few of them, also of the Japanese, kept alive long enough to furnish materials to work with for a few years, which gave me a fine lot of cross-bred seedlings that far exceeded any of the former in size and quality. Much time, work and money have been spent in this direction, though I have never regretted it but am well pleased with the progress made.

To go into detail or describe the manner of cross-fertilization will not be necessary here, the methods of Prof. Hansen and others are so familiar with you. Sufficient to say that the method employed by one is about the same as that of the other or very similar. There is this difference, that with me the work has been done only in a small way, while Prof. Hansen and others are doing it on a much larger scale and put in full time the season through, thereby having a much greater number of seedlings to choose from.

There are other ways in which I have originated cross-bred seedlings, a few of which proved equal to some of those that were cross-fertilized by hand. These were produced in a somewhat similar way

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where I in a measure assisted nature in the cross-fertilization of the flowers. I selected the favorite trees I wished to use as female parents. These were headed low and scions of other good varieties to be used as male parents were grafted in the outer, top limbs of the female parents, but one variety of the male being used to fertilize the flowers of the female parent tree, a different variety as male used in another place for the same female as first selected, and so on till this same variety of female would be fertilized by the pollen of different varieties. In each case the female parent to be fertilized would always occupy the place in the center and be surrounded by the male, or variety that was thus grafted, in the outer, top limbs. By being centrally placed the pollen from the males would naturally fall upon the flowers of the female, be blown by the wind from any direction or carried there by bees and other insects working among the flowers. To make the cross-fertilization more sure, enough of the female flowers were removed so that only about one-fourth remained. I did not allow any flowers of the female parent to open ahead of those of the males—if so I removed them till the males had opened some of their flowers first, in order that their pollen might be ripened in time to fertilize the stigmas of the female by the time these would be in condition to receive it. It takes only a few hours for the stigmas when exposed to the sun and light to be in this condition, which is shown as soon as they become sticky, when they will take the first suitable pollen then available, and as all the flowers do not open at the same time there would be plenty of ripe pollen to fertilize all of the female flowers.

Still another way very similar to this one was to surround the trees that were selected for the females with a few others of the best males. In this case males of more than one variety could be used for the crossing of the flowers, but then the parentage of the seedlings would not be known to a certainty.

Twigs of trees growing at a distance have also been cut off when in full bloom, tied to the branches of other varieties and by the shaking of the twigs now and then I caused the pollen to fall upon the flowers to be cross-fertilized, and then by removing three-fourths of the flowers of the female the few that remained would be better fertilized and the ones that set would also be better supplied with nourishment from the parent tree. The seeds from such have given strong, healthy and vigorous seedlings that produced large and fine fruit.

It may seem from the foregoing that to produce cross-fertilized seedlings by following the methods generally employed is not a difficult matter. When you have all the best of materials to work with

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you will get some now and then, and they may be hardy, fruitful and good in quality, but you will find the ones that give the largest and finest fruit are very few and far between, and there is where the difficulty comes in.

The planting of these fertilized seeds is done the same season as soon as well ripened and before they dry out, after having first been tested, which is done by dropping them into water, those which settle at the bottom being sound, the ones floating on top or not readily sinking having no value. For convenience the pits should be planted in rows and may be planted as close as six inches apart.

The seedbed should be prepared a month or more in advance to give the ground time to settle and the seeds planted about one or not over two inches deep, pressed firmly into the ground by the thumb or other implement used for that purpose and the place covered up with earth and afterwards with a thin coating of sand on top, enough to prevent a crust forming and also drying. In this way the roots of the young plants can lay hold of the soil at the start and will make a much stronger growth. It is a mistake to plant seeds in newly prepared soil, which is loose and too open, and soon dries out. The soil and seeds are easily washed out by heavy rains, and the roots, which cannot get hold of the loose soil, readily become weak, sickly and stunted in their growth, and the seedlings may finally be blown out of the ground by heavy winds. The seedbed should also be free from wireworms, grubs and cutworms, as many of the seedlings are lost by the work of these. The wireworm will enter and destroy the life at the time the pits open in early spring, the grub will undermine the seedling and destroy the roots, and the cutworm cuts off the tops above the ground.

If the weather continues dry after the seeds are planted boards may be placed on top of the beds and left till the ground becomes frozen. By planting the seeds too deep some of them die before reaching the surface, becoming exhausted in their efforts to break through.

Enough of the seedlings when well out of the ground are dug and transplanted elsewhere to give the remaining ones more room to grow, and the soil is stirred about them to encourage a good growth the first season. They should also have some care the first few years.

Among the best seedlings that I have originated I shall only mention two here. One is a cross between the Wickson plum and a native seedling plum of my own; the other is a cross between one of the Japanese plums and a native, also a seedling of my own. Both are fine, the latter being the larger and better of the two. Specimens of these two varieties were mailed to Mr. Loring, Prof. Green, Mr.

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Underwood and others with a photo of the latter mentioned variety showing the full size of the fruit, and letters I received from these gentlemen show that they were very much pleased with the fruits. The one first mentioned produces fruit of long keeping quality which will hang on the tree long after it is colored. It is bright red, hard and firm, turning deeper red as it ripens and is of best quality, or it may be picked as soon as colored and will ripen and keep for a long time. The tree is perfectly hardy. The other variety produces fruit of very large size and best quality, nearly round and of a beautiful red color, the larger specimens measuring one and seven-eighths inches the long diameter. It has a very small pit.

In growing seedlings year after year the place became so crowded with trees of all sizes and ages that they obstructed the view in front of the house and had to be reduced to as small a number as possible. The wife said that I had spoiled the looks of our place and that it was foolish to waste my time, that the work was all for nothing, and that I would never realize anything from it. Of course I had to obey and since then have cut down more or less of the trees every year till at present but a few of the best remain.

Seedling plum, cross between Japanese and native, exact size. Originated by H. Knudson, Springfield, Minn.

In concluding this article I will say that as some of the earlier seedling-workers are getting well along in years—some who but a few years ago thought themselves young—as some have passed away and others are failing in health and strength, their work thus begun must be for the younger generation to take up. As we find the time short, it will be none too early to make a start, the sooner the better. They have a wide field before them and plenty of materials to work with, and if they go at it while young will have a liking and love for it; and the results of their work may some day surprise them by the finding of varieties among seedlings of their own of which they may feel proud.

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SECRETARY'S CORNER

ANNUAL MEETING, SOUTHERN MINN. HORTICULTURAL SOCIETY.—The program of this meeting is not yet in the hands of the writer, but it can be announced here that the meeting will be held in Austin on Jan. 18th and 19th. The usual practical program will be presented, and all members of the state society within reaching distance of the place of this meeting are urged to attend and lend their assistance in making it a large success.

HAVE YOU RENEWED MEMBERSHIP FOR 1910?—If not, and you have failed to notify the secretary to the contrary it is taken for granted that it is your purpose to continue upon the roll, and we are very glad to have it so, as we are loath to lose any names from our membership roll. It is the strength of the society both in numbers and in united effort that is making the organization such a force for good in the development of horticulture in this region. Please renew at your early convenience, and send in one or two of your neighbors at the same time, which will entitle you to valuable horticultural books as premiums, a list of which can be had of the secretary.

MUCH GOOD READING IN SIGHT.—This number, the first of the year, is necessarily occupied in large part with the official reports of the society made at the annual meeting, so that only three papers on horticultural topics appear. Later numbers will be rich in this valuable material, of which a large quantity was secured at the late annual meeting. Fruits, orcharding, vegetables, flowers, ornamental trees, home grounds, and indeed all branches of horticulture will receive some measure of attention during the year. Can you afford to miss this rich treat, and are there not many of your neighbors who ought also to have the advantage of it? Secure their names as members and give them the premium book if necessary to get them in. You will be doing good to your fellows, which is one of the maxims of the members of this society.

J. M. UNDERWOOD FOR PRESIDENT OF THE STATE AGRICULTURAL SOCIETY.—The following resolutions endorsing our fellow member, Mr. J. M. Underwood, as candidate for the presidency of the Minnesota State Agricultural Society were adopted at the late annual meeting of this society by a unanimous vote. Mr. Underwood's election to this important office has much to do under the circumstances with the future success of what we consider to be the best state fair in the United States. His qualifications for this position are unique and insure good, honest and efficient administration of this most important office. The members of this society can assist in the appointment of delegates from the county agricultural societies to the annual meeting of the State Agricultural Society, which convenes in St. Paul, Jan. 11th, favoring Mr. Underwood, or if the delegates are already appointed by communicating with these delegates and expressing their wishes in the matter. Please be emphatic and earnest in this as the occasion demands. Whatever is done about this must be done immediately, as the time is short.

Whereas the present incumbent of the office of president of the state fair, Hon. B. F. Nelson, declines renomination, and it will therefore become necessary to elect some other person as his successor, and

Whereas, our fellow member, Mr. J. M. Underwood, of Lake City, by his long experience of fourteen years as a member of the state fair board.—in which capacity he has served in numerous departments of the state fair,—and by his experience as a business man in the management of one of the largest nurseries of the state, employing several hundred men, and by his intimate acquaintance with all branches of practical agriculture and horticulture, is especially fitted for the successful holding of so important a position as that of president of the Minnesota State Agricultural Society.

Now, therefore, Resolved that we, the members of the Minnesota State Horticultural Society, in annual session, hereby urge upon our membership and all friends of horticulture, of good administration and judicious expenditure of the large funds of the State Agricultural Society the election of Mr. J. M. Underwood as president of the State Agricultural Society at the coming annual meeting of that society, to be held early in January next.

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HORTICULTURAL HALL, MINNESOTA STATE EXPERIMENT STATION, ST. ANTHONY PARK.

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THE MINNESOTA HORTICULTURIST

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TRIAL STATIONS, 1909.

Central Trial Station, St. Anthony Park, Minn.

PROF. S. B. GREEN, SUPT.

At the central experiment station the work has increased, and I think is in closer touch than ever before with the rural interests of the state. Among the special lines that call for mention is the work of the fruit-breeding farm, where substantial progress has has been made in the development of new varieties. There are now close to one hundred thousand seedling fruits on trial at this station, and we hope that, profiting by the experience of the many private and public experimenters in this line, we shall be able to achieve important results for the horticultural interests of this section. As the work at the farm is but two years old, we have but little to report in the way of final results, although the report of progress is one that gives us much encouragement. Among the strawberry and raspberry seedlings that fruited with us this year were a large number of considerable merit. Over one hundred plants of strawberry seedlings were exhibited at the summer meeting of our horticultural society and elicited much favorable comment. Some of the crosses between the Japanese and American varieties of plums are very promising and have been top-worked on other stocks and made a vigorous growth.

The practice of potting our fruit plants and then crossing the flowers under cover, where the conditions can be controlled, is one that we have followed the past year with favorable results, and our plans are laid to enlarge this work the coming winter. The drain tiles that were put in a year ago have given good results, and a few wet places which they drained have been very much improved. Some of these outlets have run a continuous stream for over a year.

The work at this farm seems to meet the approval of an increasing number of visitors from time to time. It is confined entirely to

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the planting of fruits, and we shall aim to devote it exclusively to this purpose and avoid mixing it up with other lines of investigation.

At the central experiment station, at St. Anthony Park, special attention has been paid to the growing of potatoes, and careful tests have been made of varieties and the best methods of reducing the injuries from insect pests and diseases. This work has required nearly the whole time, during the growing season, of Prof. A. R. Kohler, who has been in charge of it.

Horticultural Hall and greenhouses, at Minnesota State Experiment Station.

A large number of varieties of annual flowering plants have been tested, and this has proven a popular line of work. Among the seedlings that have flowered this year have been a few peonies of more than ordinary merit, to the development of which we look forward with a great deal of interest. Professor Cady has special charge of the campus and horticultural grounds, including the flowering plants.

In the line of forestry I have little new to report, except that the last legislature furnished us means for greatly extending our work of instruction and experimentation in this line. As a result of legislative enactment and the generosity of certain citizens of Cloquet, a reserve of 2,700 acres has been provided near that city, which will give us excellent opportunity for demonstrating intensive forestry. It will also be a valuable place for our students on account

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of the co-operation which we get there from the various lumber companies and the opportunities to use their nearby camps and mills for demonstration purposes. In Itasca Park, in addition to the school work carried on there, our field practice has been confined largely to the putting in of fire lanes and studying the best methods of preventing forest fires.

One bulletin has been published by the department of horticulture, it is entitled "Potato Growing in Minnesota," No. 114.

Collegeville Trial Station—at St. John's University.

REV. JOHN B. KATZNER, SUPT.

As the annual report of the trial stations should be as complete as possible, I have from time to time put down a few notes on the work that has been done during the year, on the results and failures met with, as also on points of general interest, personal experience and observation. These notes now serve me well in writing this report.

The winter, being one of average severity, did no serious damage to our fruit trees. All the leading varieties were in a good and healthy condition at the opening of the season; only a few apple trees set out the preceding year were frozen. I might mention the Transparents; they had been planted on a knoll, where the snow blew off right along during the winter. A few others were also killed in the chicken yard, which seems to be the worst place for apple trees to succeed. Some of these I have already replaced for the third time, and very probably I shall have to do it again. As the bearing orchard had lost considerable of its former thrift and made but a poor growth last year, it was entirely manured during the winter months. A wheelbarrowful of stable manure was given to each tree. The orchard is now in better condition than last fall.

In the nursery, too, everything looked well in spring with the exception of the imported European pears, of which I have yet twelve varieties. They all froze down to the snow line. It took just ten days to finish them. Before January 5th these pears were in good condition; then cold set in, lasting till the 15th inclusive, during which time the mercury went down from ten to thirty degrees below zero. On the 16th warm weather came along, the thermometer gradually rising above freezing point, and it rained. The effect of the cold spell was observed immediately after the frost was out of the pear trees—

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the wood had turned black. The 1,800 pear seedlings fared a little better, some indeed froze down to the snow line, but many of them were injured only a little. The nicest specimens had been marked last fall, and thirty-six of the hardiest were transplanted this spring. This selecting will be continued. The two pear seedlings, now nine feet high, were not hurt by the cold. The Vermont Beauty pear and a sweet cherry tree were injured some but not killed.

Father John B. Katzner, Collegeville, Minn.; at his side a Siberian crab tree in full bloom one year after planting.

Several varieties of prunes and blue plums on trial in the nursery have also been hurt by the cold, but one blue plum surprised me; it was apparently not injured at all. It made a vigorous growth the last season and is now of bearing age. I regret to have lost its name.

As soon as the weather conditions were favorable last spring we went at tree planting. Some fifty apple trees of different kinds and a few plum trees were set out in the orchard. Root grafts of ten varieties of apples, among which are four seedlings, mostly from Wisconsin, and two varieties of pears, were planted in the nursery. A dozen plum trees were top-worked on the Surprise, and also one

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of the hardy pear seedlings was grafted with four named varieties as an experiment. All the work was successful, and the trees and grafts grew nicely during the season.

For planting the evergreen seedlings I got some bright young men from our school to help me. First I gave them a talk of ten minutes on evergreen planting. I am sure this lesson was not given in vain, for I failed to find a seedling that did not grow. About 1,000 bull pine, 2,000 white pine and 500 European larch were set out. One thousand or more of these were used to replace those that failed to grow the preceding years, the failure of which I attribute to the too early planting and to the careless handling of the seedlings by the hired men, who did the work without supervision. The other seedlings were used to fill out gaps among the older evergreens. Now the evergreen seedbeds were prepared again, taking particular care to kill all the white grubs that were spaded up. These innocent looking, doubled up white grubs are regular rascals. As I found out later, they were the fellows that ruined five beds of nice evergreen seedlings for me by biting off the roots of them below ground. Go for them every time you have a chance!

Last year our larger Scotch pines and white spruces were full of cones. Several sacksful of these were gathered, dried, the seed shaken out and cleaned. Four beds were seeded to Scotch pine and four beds to white spruce. The Scotch pine seed came up full and strong in three weeks' time and the white spruce—well, I am still waiting to see it come; only a few sprouted the latter part of July. Protect the evergreen seedlings against birds! As soon as the Scotch pine came up well the cover was removed, and the sparrows thought it great sport to pull the seed from the tender seedlings, which of course ruined many plants. I had to cover the seedlings again for a few days, till the seed caps were thrown off. I changed the low system of screening again to the high one. As I had a pile of old lumber at my disposal, it was built without much expense. It seems easier to me to raise evergreen seedlings under a high screen. The plants are more easily weeded and watered under it. Besides, after being built once you have no more trouble with it for the next ten years. I planted a few German acorns and one bed with German beech seed. None of the acorns and only about fifty beech sprouted. Most of these turned black in a few days and are gone; likely the rest will go later.

The surplus of the Scotch pine and white spruce seeds along with some arbor vitae was sown directly in the woods. The sowing

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was done in strips one-half a mile long and the strips two rods apart. The leaves were first removed and the strips afterward gone over with a rake. Ten strips were thus planted. No doubt much of the seed is simply thrown away, but some will grow to trees, and then they will take care of the seeding themselves. This work will be continued.

The orchard never blossomed so profusely as this year, and the apple crop was very good. We had heavy rains during blossoming times and expected only a light setting of fruit. The Duchess, Wealthy, Patten's Greening, Patten's No. 112, 105, and 108, Hibernal, and Froeble's summer apple were about the best bearing trees. Shield's crab too was well loaded with fruit but was injured much by scab. The plums were again a disappointment, and I have just about lost all interest in them, and the cherries are not worth mentioning; they will be discontinued. Of grapes we had a light crop. The strawberries did very well—we have the Splendid and Senator Dunlap. Our gardener is quite enthusiastic about raising this fruit, and new beds were planted to strawberries last spring. The old currant bushes were removed after picking the little fruit they had, and new plants set out this fall. Vegetables of all kinds were raised in great abundance, and the root cellar is well filled with them for winter use. The many different flowers and shrubs were of unusual excellence, and the floral designs very effective. One of our neighbors planted some wild strawberries along-

Students' walk around the campus at Collegeville.

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side his Dunlaps and treated the wild plants just like the others. The result was surprising, some of the wild strawberries measuring ⅞ by ⅝ of an inch; I measured them myself.

In regard to two lots of apples trees which had been grafted on Pyrus baccata and sent out by the Central Station in 1905 and 1906 respectively, it is to be reported that this year four trees of the first lot, Charlamoff, Duchess, Hibernal and Patten's Greening, were bearing their first fruit. Two trees of the twelve are perfectly healthy and thrifty, four of these are very good, four others are not quite so healthy —they had been injured in the crotches the first winter—and two trees are dead. Of the second lot three trees are perfectly healthy and thrifty, six others are very good, and four are dead. None of this lot have shown any bloom yet. The nicest trees are the two Charlamoff, of the upright growing kind. The Elliot seedlings are very hardy, but not promising, and likely I shall have to remove them.

Some butternuts, hickory and Ohio buckeye chestnuts were planted last fall. Most of these nuts sprouted and grew well. These seedlings will be transplanted to their permanent location next spring.

The thought often came to my mind, why so many grown up, large apple trees persistently remain unproductive, although some of them are varieties that are known to be very prolific? We know that the climate, soil and location have a good deal to do with that, but it seems to me that the main cause is to be found in the practice of using nursery trimmings for grafts and that continually. It is stated that scions should be cut only from healthy, well-bearing trees, and this horticultural doctrine seems to be strictly adhered to by European nurserymen. They have large so-called mother-gardens in which they grow all the varieties used for grafting. One of these nurserymen, whose catalog I have, after giving a long list of trees from which scions can be sold, plainly states, that he has many more varieties, but some of these are sickly and others have not yet borne sufficiently, so that scions from these trees cannot be cut this year. I have many Virginia and Transcendent crabs, the scions of which I cut from small trees; now these trees are large enough to bear five or six bushels of crabs a tree, but they are doing nothing. Others again I had grafted from bearing trees, and those young trees were bearing well in a few years.

Until now it was not well possible for our nurserymen to cut all the scions from bearing trees, when they had to set out 50,000 grafts or more every year to meet the demands of trade, and they had to use the nursery trimmings. Many times the people themselves are

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at fault. As soon as something new appears on the horticultural horizon they all want to have it, they can't wait till the new variety is well tested and good bearable stock is ready for sale. And hence the nurseryman is forced to use every bit of wood grown on the young, undeveloped trees for grafts to satisfy the whims of his customers. If the buyers of such stock are then disappointed in their expectations they put all the blame on the nurseryman, who imposed upon their credulity. Allow me to say, that all nurserymen should have such so-called mother-gardens, in which to grow at least all the leading varieties and from which to cut their supply of scions after the trees have come well into bearing. If then such grafted trees should bear better crops in general, they would certainly please and satisfy the people. For early and well-bearing trees are a gratification to the customers and incidentally the best recommendation for the nurseryman.

Excelsior Trial Station.

A. B. LYMAN, SUPT.

The past winter was a favorable one for fruit trees, and the apple crop was a profitable one. Mice did more damage than usual by girdling the trees; some lost trees were six inches in diameter. There was no loss to trees that were banked with earth. Many attribute this work to the rabbit, yet it is mostly done by the common field mouse.

The apple crop was largely sold through the local fruit association, and prices obtained were generally good. The largest part of the apples were packed in bushel boxes, and the outlook is that boxes will be used largely another season. Growers are compelled to grade better than they did while using the barrel, and the consumer is not slow to notice this. Some think that the association will repack all fruit as it is received another season, and all unsalable fruit will be returned to the grower; in this way the manager will know just what the fruit is, and there will not be so many calls for rebates for poor fruit.

Too many varieties are found to be a handicap. The three leading varieties are the Duchess, Wealthy and Patten's Greening. Before using the bordeaux mixture the latter would dry-rot with us, but of late there has been no trouble. Nearly all spray, and the fruit improves each season. Some are using the lime and sulphur spray, and it seems to be a good thing, and its use will without doubt become general.

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Mr. Kenney has shown how the size of the Malinda can be increased by top-grafting on the Duchess. We find that where the whole tree is made over to a new variety, and the top retains its usual size, the fruit will no longer be of unusual size. The size of a

A. B. LYMAN, EXCELSIOR.

late apple top-worked on an early variety will be increased if but a few grafts are set; but, as I have said, this will be true for but a short time where the entire tree is made over and the top regains its usual size. We have had grafts produce fruit of undersize while over-

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bearing, and if a tender variety they are likely to die the following winter. Did they overbear because of previous injury or was their dying due to overbearing? This is an interesting question. Top-grafting has its place and seems to add something to hardiness, yet we believe it dangerous to try and grow half-hardy varieties even this way except in a limited way and then only for the pleasure of it. I refer to apples that are tender, like Ben Davis, Grimes' Golden, etc.

Shy bearers seem to bear well when top-worked on other trees I have in mind some crab trees so top-worked some fifteen years ago by my father with the Peerless. They have borne well, and we have no more profitable trees in the orchard. When these grafts first fruited the fruit was not so large, and many thought they were not Peerless; now the fruit is of normal size.

Moderate pruning and thinning of fruit has been practiced by some, and it pays. Pruning seems to add vigor to the tree, and the thinning improves the size of the remaining fruit. Some fancy apples so grown were sold for over $2 per bushel. I know of one lady that so treated an old Wealthy orchard, spading up around the trees, pruning and thinning the fruit, and the apples she marketed would equal any of the western box apples in appearance, and we dare say would surpass them in quality. The past fall we spent some time in the apple orchards of western Washington and make this statement after close comparison. I do not think it safe to prune as severe here as they do there.

The twelve trees grafted on Baccata roots we received some time ago are making a good growth; there does not seem to be any difference in the growth of those planted deep and those planted shallow.

Our Brett apple trees have blighted somewhat. The Gilbert has done well. The fruit is of a good size, and the trees have borne well. Our Malinda trees are doing well. We have the four trial trees, and they are bearing good crops every alternate season. While not the best apple, they are valuable because they keep. Our Evelyn and Perfect bear well each season.

All the fruit of the late keepers was injured by the early freeze this year. The apples were not injured in appearance as much as in quality. Freezing was quite general, as the weather changed so suddenly. Perhaps it will be necessary to pick the late fruit as early as possible in October and not take chances by letting it remain longer on the trees. We have picked as late as October 23 and had the fruit perfect. These last two weeks add greatly to color, yet there is danger from frost.

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Glencoe Trial Station.

A. H. REED, SUPT.

Although it is not the province of a trial station superintendent to report the weather or crops, which duties better belong to the vice-president of districts, but rather that of progress and proven features of successful horticulture, I will digress in commencing this, my third annual report, by reporting that the part of the state in which McLeod county is situated had another, the fifth season, of very heavy rains throughout April, May and June, and while my record notes of May first, read, "Froze three last nights, ground covered with snow," yet our section had a very abundant apple crop, exceeding that of the season of 1907.

While my horticultural work the past season has been divided between fruit raising, vegetable gardening and the propagation of forest, shade trees and shrubbery, my principal work has been devoted to the care and propagation of the apple and apple trees. I have grown stronger than ever in the faith that within a very few years Minnesota will be producing in large quantities many varieties of apples as good as produced anywhere in the United States.

I find by splice-grafting that many varieties, such as the Jonathan, Baldwin, Grimes' Golden and other tender varieties grafted onto my bearing trees grow vigorously each year after starting to grow, while twenty-five per cent of scions propagated by root-grafting fail to grow, even if of the hardiest varieties.

In the spring of 1907, I planted one hundred each of apple root-grafts of the following varieties, which I have watched with great interest, viz.: Yellow Transparent, Black Ben Davis, Aiken, Baldwin, Bismarck, Black Annette, Gano, Jonathan, Northern Spy, Talman Sweet, Yellow Bellflower, and York Imperial. I let them stand through the winter without mulching. Sixty-nine per cent of the Jonathans grew and every one of the sixty-nine came through the hard winter of 1908-9, with the ground bare of snow much of the time and made a vigorous growth the past summer. I look to see every one of these varieties come through the approaching winter equally as well as last winter, and have no doubt that they will live and continue to grow after being transplanted and within five years will be producing fruit.

My bearing apple trees have increased from about one hundred to some three hundred the past season, and I name the varieties of bearing trees in order of the best bearing kinds, viz.: Hibernal, Patten's Greening, Wealthy, Peter, Anisim, Longfield, Peerless, N. W.

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Greening, Whitney, Transcendent and Strawberry crabs. While the Peerless tree is a shy bearer, from this season's product from trees set nine years ago I am more favorably inclined towards its propagation than ever before, as it has proven a better keeper than the Wealthy and is nearly as good for eating. The fruit is of good size, and when ripe is one of the handsomest red varieties that any of my trees have produced.

Of the several kinds of shade and forest trees set out in the spring of 1908, I have to report: Of the 100 young white elms set out about one foot apart nearly every one grew finely and will be in fine size and condition to transplant in the spring to where I wish them to stand permanently. The Carolina poplars have proved the most rapid grower of all trees yet planted. Black walnuts set after one year's growth are most sure to live, but the older they get before transplanting the harder it is to make them live, as they have a tap root and few or no fibrous roots.

The catalpa tree does not prove hardy with me, neither does the Wisconsin weeping willow nor the weeping birch.

I have become convinced that by injuring the inner bark at the base of an apple tree or a limb that it will cause it to produce fruit when if not so injured it may remain barren for years. I found several of my apple trees from two to four inches through where girdled by mice fruited when those of the same age and varieties bore not an apple. On one tree I noticed one limb hung full of apples while the rest was bare of fruit, and upon examination I found that at the base of the fruiting limb that from some cause the bark had been bruised half around the limb but had healed up.

With me I find that ground mice are the worst enemy of an apple orchard, rabbits next and pocket gophers third.

Where grass is allowed to grow close to apple trees under ten years of growth, mice are quite sure to girdle the tree by eating the bark, often completely around. I have found a sure preventative by throwing up around the trunk a few shovels of fresh dirt just before it freezes up. As rabbits climb higher to secure more tender bark, they are not so easily provided against, but they seldom kill a tree outright. I have had several of my largest and most thrifty trees killed by pocket gophers. Upon digging up such trees for examination I found the entire root system gone, supposed to have been eaten by the gopher family during the winter.

I have been troubled the past season by numerous "worm nests" and I found a good way to treat them was to burn them with a corn

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cob saturated with kerosene, which with a three-eighths inch iron rod sharpened at one end, upon which the cob is placed, can be run up into the nest, which is quickly and easily destroyed without detriment to the tree.

I am pleased to note that the planting of apple trees is becoming more general each year. Some are adopting them for lawn and street trees, while the box elder is being discarded, as it should be.

I consider the white elm tree above all others the most valuable shade tree for Minnesota in existence. The older it grows, the handsomer and more majestic it appears. I have a few elm trees of my own planting over three feet in circumference and regret that I was not wise enough to have set elms wherever I have set cottonwoods, maples or box elders in the past forty years.

Hendrum Trial Station.

O. J. HAGEN, SUPT.

During the past year the weather has been the best for many years. The apple crop of all kinds was one of the finest in many years, even such as Tonka and Moulton crabs were loaded full, and the fruit hung on well to maturity. The only sort here that refused to bear fruit is Martha. The most remarkable thing is, there was not a sign of blight this year, no spraying was done, and very little of insects visible. The snow came early this fall before the ground froze, and the soil has lots more moisture than last fall, so it is expected trees of all kinds will go through winter in excellent shape. The trees have shed the leaves better than in former years, which can be accounted for by the right amount of moisture we have had. The plum crop was a total failure, and I cannot account for that remarkable fact, unless it might be for the heavy crop of last year, and the extremely dry summer and fall of last year. But everything came out strong and vigorous last spring.

Nothing new has been received for trial here the past year, only what the writer has experimented with. Last spring we planted out a little over 300 evergreens, as follows: black spruce, white cedar, bull pines and tamarack. The last named did not stand the sun and the hot, dry winds from the south as well as the balance named above, which stood it apparently well, as I only lost four out of 300. I lost five of the tamaracks, twenty-five in number. Twenty-five tamaracks were planted in grove of poplars. They did fine and none died. Otherwise little was added to this place last year, with the exception of

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planting ten Iowa Beauty apple trees. They were received in poor shape, half dead, and the loss was heavy. The nurseries of our state should exercise better care in handling nursery stock and in packing for shipping. There is no wonder people get tired of nursing half dead trees, that finally die with the best of care. The writer has seen too many times how deplorably the trees have been packed that have arrived here, laying at the depot, boxes broken open, and the trees inside of boxes with their roots bare in sun and wind, without any packing in among the roots. Such a deplorable condition in handling live trees, no paper lining nor packing visible, should not be accepted by the people. It is well enough to replace, but time and worry are spent in replanting, and again half dead trees.

Some top-grafting of apples was again tried in a small way. Most of the scions of different sorts died, but mostly all that were taken from my own trees grew. All the grafts were put on Martha trees. One graft put on Martha four years ago bore a sample of Northwestern Greening. It appears Northwestern Greening is a little bit hardier when top-worked, but it bears indications that it is too tender even for that purpose. Patten's Greening seems to take more readily on the Martha as stock than any others, and the fruit is free from disease and has a good color and quality, and most of these trees are clean, healthy and strong in the clutches. One remarkable thing is, I have had one Japan plum tree of the name Satsuma, that survived nine winters here and never shows any sign of freezing back, but has never borne any fruit. The indications are that they are weakened in fruit buds every winter, so they are worthless except as a curiosity.

Of currants was added by me about thirty Perfections. As I have seen it grow elsewhere, can say it is among the best we have. The currant crop was good this year, but raspberries a failure. The Older, of the blackcap variety, was full. Many sorts of apples have been planted for several years back but have not borne yet, such as Malinda, which is a slow grower here; Lowland raspberry is a fast grower; Tetofsky is hardy but tardy in bearing; Yellow Transparent appears hardy but only a biennial bearer of large, fine fruit. A good many sorts of fruit will probably bear and do better on a different soil than I have here, which is a heavy, black soil, strongly alkaline.

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Jeffers Trial Station.

DEWAIN COOK, SUPT.

The benefit of the spraying which we did last May and June with bordeaux mixture in our apple orchard did not fully appear until we harvested the crop. We used the 3-3-50 formula, three pounds of blue vitrol, three pounds of lime and fifty gallons of water. Compared with former years when we did not spray, the fruit was larger, of better color, of better quality, and more of it, nearly all of it being marketable. The fruit hangs on the trees better and, I believe, is keeping better—that is, what we have left of the crop.

We added for the last spraying, which was done about June 15th, four ounces of paris green for each fifty gallons of the mixture, and will say that there was not a wormy apple seen in over a thousand bushels which we raised. By spraying we have reduced the apple scab to almost nothing; there has been no premature dropping of the foliage this season of any of our apple or crab trees, and for this reason we expect to get a crop of apples next season.

Some of our Wealthy apple trees, being closer together than I thought desirable, last June I cut a girdle of bark about one inch wide clear to the wood entirely around those surplus Wealthy trees, intending to cut them down and make firewood of them next spring. The result of girdling was this: Fruit on the girdled trees was all about double the size of the fruit that grew on the ungirdled trees. Furthermore, new bark has grown entirely over all of those girdled places and the trees are well set with well developed fruit buds for next season's crop, while the fruit buds on the ungirdled Wealthy trees are not plentiful.

This season's experience has also been in favor of better cultivation of the orchard. In that part of the orchard where the trees had been in sod for several years, the fruit was comparatively small; in other parts of the orchard the fruit was larger, according to the cultivation given it.

We have not done very much with cherries at this station, but we have a few trees, twenty-five or thirty of them. The season of 1908 they were attacked by some fungous disease that caused them to prematurely lose their foliage. Last spring we sprayed with bordeaux once just before they came in bloom. This season there was no disease, and the foliage held on the trees six or seven weeks later than it did the preceding season.

We have but little to report on native plums except failure, but there are two varieties growing here that have the merit of setting

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regularly a fair crop of fruit regardless of unfavorable conditions at time of bloom. They are the Rockford and the Paul Wolf. Of the two, I like the Rockford a little the better; they both are quite susceptible to the plum rot.

The most satisfactory plum we fruited this season was the Japanese hybrid, known as B. A. Q. Fruit is one-half larger than any of our natives; has small pit, very firm flesh and is a perfect freestone. We are testing all of the Japanese hybrid plums at this station that we can get, also Prof. Hansen's sand cherry hybrids. We have great hopes that out of this flood of new varieties coming on that there may be some that will prove more valuable for us than any we have heretofore had.

The Telegraph grape is still proving a success here. It needs but little, if any, winter protection, is quite early and bears from three to four clusters of grapes to the spur. I can recommend it for general cultivation for home use in this section.

We have a row of American larches (tamaracks) about thirty-five or forty rods long, set six or seven years ago, outside on the west and away from any other windbreak. They appear to be perfectly hardy and adapted to prairie planting.

Of apples the Duchess and the Wealthy still continue to be the most valuable varieties I am growing. The Antonovka rotted badly upon the trees, and careful hand picking and putting them in barrels did not appear to help any. I do not think as much of this variety as formerly.

The Cross apple (413m) has again given good satisfaction. I think the fruit will keep somewhat better than the Wealthy. Patten's Greening did not quite come up to expectations. There was considerable damage by cracking on one side of the fruit, and on some of the trees much of the fruit rotted upon the trees.

Our one tree of Scott's Winter gave us about seven bushel of medium sized fruit. Tree is a strong, bushy grower, and is fairly hardy. Jewel's Winter, while not a vigorous grower, appears to be hardy and is productive. The fruit is of good quality and an all winter keeper and looks fine in the barrel, in which respect it ranks with the Wealthy. This variety is promising. The Malinda is still our standby for a very long-keeping apple. It is doing finely here. For an early apple the Lowland Raspberry is making good. The fruit is of fine size and color, and of a quality that excels all others of its season; tree is very productive and hardy.

Northwestern Greening is still holding its own. The Gypsy Girl is a most beautiful apple, but we do not think very much of its quality or productiveness.

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La Crescent Trial Station.

F. I. HARRIS, SUPT.

The season of 1909 goes on record as the most discouraging to fruit growing in the history of this station. In fact, in an experience of more than fifty years of more or less successful fruit growing in the state it is the only year without fair returns in some branch of the business. It was a season of great expectations and small fulfillments. Just what was the matter I am unable to determine satisfactorily, as a number of orchards in this vicinity bore a good crop of excellent quality and that without any care. It was simply an off year, and being the first it is the exception to the established fact that fruit growing is a successful industry in the state.

The outlook in the spring was never better and the bloom was unprecedented, but the first drop finished the plums and cherries and nine-tenths of the apples, and the small fruits owing to various causes were not much better. In the case of grapes while they came through the winter without injury, they were very late to start in the spring and were almost barren. In fact the few clusters that came to maturity were never gathered but allowed to freeze on the vines.

During the last ten years I have been engaged more or less extensively in growing small fruits on rented land, and this has taken up so much of my time that the old homestead, especially the orchard, has been somewhat neglected since the death of my father. Finding that a man cannot be in two places at the same time and that it is impossible to hire reliable help, I have thrown up the outside business and intend devoting my entire attention to the home farm, and hope to be able to report better results in the future. With this object in view I have had a lot of thinning done in the trial orchard, in most cases removing every alternate tree and also many others which have proven unworthy of cultivation. This orchard was originaly set twelve by twenty-four with a row of plums between each two of apple, so they were practically twelve by twelve. After waiting seven years hoping for some return from the plum trees, three years ago I had them removed root and branch. The following year the apple trees matured a good crop of excellent quality. After the present thinning is completed, while there will only be one-fourth the number of trees in the orchard, they will be in a condition to make it possible to properly spray and cultivate, and I am confident that the returns will be larger and the quality of the fruit improved. This matter of planting too closely has been one of the most serious drawbacks to growing good

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fruit. The foliage prevents the circulation of air and sunshine, and the result is undersized and poorly colored fruit, at least this has been my experience. If I were going to set out a new orchard I should plant not less than twenty by thirty, and thirty by thirty-five is better.

My past experience has convinced me that it is impossible to grow good fruit without spraying. This is practically the case in the valleys and all old orchards. There are a number of new orchards on the ridges near here that are producing annually good crops of perfect apples without any care at all except to use the orchard as a hog pasture. I began operations on this line last spring by ordering a barrel of "Rex" lime sulphur solution intending to use it for the oyster shell scale while the trees were dormant. It arrived too late for this and was used after the trees were beginning to open, and the results were poor and the injury to fruit buds severe. After the bloom had fallen one thorough spraying was given with bordeaux and arsenate of lead standard solution, intending to follow this with two more applications, but immediately after fruit had set the drop began and nothing more was done except on a few choice trees. The result was ten per cent of a crop of poor quality. About seventy-five varieties of apples bore some fruit and fifty varieties were shown at the State Fair. The old Flemish Beauty pear tree only matured a few specimens this season, and blighted so badly that it finally died.

During the last six years all trees removed from the old orchard have been replaced with standard varieties, and a new orchard of 1,000 trees, all Wealthy, set out. These are just beginning to bear, and high hopes were entertained of car loads of fancy fruit in the near future, but these were dissipated when the snow disappeared and on looking over the orchard found nearly 400 of the choicest trees injured by the ravages of rabbits and mice during the winter. Many of these had wooden protectors and the rabbits waited for a thaw and then when the snow had crusted cut the tops out. On the low land they were banked with earth and after the crust formed and another storm came the mice worked under the new snow and some of the trees were completely barked to a height of nearly two feet. I mention this to warn the person who depends on these measures for protection. For myself I am going to shoot the rabbit and train the old cat to catch the mice.

The crop of strawberries was about the smallest on record, but the quality good and prices realized satisfactory. The season was the shortest ever, first picking about June 15th and practically all in by

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July 4th. Senator Dunlap is exclusively grown for commercial purposes and it's a money maker here, but must be grown in narrow rows and well-thinned to get the big berries. Currants and gooseberries were blank. Red raspberries produced a fair crop where winter-covered but were shortened by dry weather. Cuthbert is the standard commercial variety. Black caps a light crop of good quality. Blackberries set a heavy crop, but the season was shortened by the drouth. The twelve apple trees budded on Baccata roots are now reduced to three, and they are doing well. All blossomed and one, a Wealthy, matured about a half-dozen apples, but as they were not sprayed the quality was poor.

Montevideo Trial Station.

L. R. MOYER, SUPT.

At the horticultural society's exhibition, held at Winnipeg, on Aug. 26 and 27, 1909, there were shown the following varieties of Russian apples grown at Brandon, Manitoba: Simbrisk No. 9, Sugar Sweet, White Rubets, Lowland Raspberry, Anisim, Rosa Repka, Cinnamon Pine, Kluvskoe, Ostrakoff Glass, Red Cheeked, Anisette, Repka Kislaga, Kursk Anis, Charlamoff, Simbrisk No. 1, Blushed Calville, Yellow Transparent, Borovinka, Hibernal and Oldenberg. Along with these were shown a few apples of American origin, such as Wealthy, Okabena and Peerless. Of the last two it may be said that they are both seedlings from the Oldenberg, while the ancestry of the Wealthy is not known.

The Winnipeg exhibit was very fine and is full of encouragement to the people of northern Minnesota and North Dakota, where few apples are as yet grown. It shows, too, that the day of the Russian apple and of its seedlings has not as yet past. The people of the Red River Valley and of the great prairies of North Dakota may have plenty of apples for at least three months in the year by planting a judicious selection from these Russians—and some of the less known of the Russians are really fine apples. Simbrisk No. 6 has been growing at Montevideo for a dozen years. It is a regular annual bearer, about two weeks earlier than the Hibernal, somewhat larger and of far better quality, and it seems equally hardy.

No. 322 is an apple of the Anis group. It has the same fair skin, the same crisp flesh, but the fruit is a little larger and of much finer quality. It is the favorite dessert apple in our garden after the Blushed Calville is gone.

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The twelve apples at this station budded on Pyrus baccatus, planted in 1905, have not yet borne fruit. Three of these trees died the first season, and two others within two years afterward, and one more now stands at the point of death. Of the six remaining trees, three are Patten in good condition, and there are one each of Wealthy, Hibernal and Oldenberg. It would seem that the Patten is rather the most resistant on this rather uncongenial host. The tree Pyrus baccata appears to be a small sized tree or, rather, shrub, and perhaps is not suitable as a stock on which to graft the common apple. It seems destined to fail in much the same way as Prunus Besseyi failed as a desirable stock on which to graft our American plums.

A shaded border has been planted on the north side of a vine covered woven wire fence. Here the blue phlox from the woods (Phlox divaricata) finds a congenial home. Here too the Canada violet (Viola canadensis) flourishes, as well as the smooth yellow violet (Viola scabriuscola). The ostrich fern (Onoclea struthiopteris) brought in from the woods grows luxuriantly and increases from year to year. The seed of one of our common blue violets was planted here many years ago, and it too has gone on spreading. We have forgotten what the seedsman called it, but it seems to be the plant now known as *Viola papilionaceae*. This last named violet grows well in the shade

A garden walk at Mr. Moyer's.

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and will cover the ground where Kentucky blue grass refuses to grow. These old native plants that have survived in the struggle for existence are the ones after all that ought to give us the most satisfaction.

In other shaded borders native plants have come by accident. Among these *aster leavis* is always welcome. Its smooth, glaucous foliage is interesting through the summer, and its blue violet flowers give a sort of finished aspect to late summer and early fall landscapes. *Aster lateriflorus* came into the border as a weed and is so interesting that we let a few plants remain. It is a sure bloomer and really, to a right minded person, even beautiful. Among these accidental plants came the white snakeroot, Eupatorium ubricæfolium, and it always gives a good account of itself with little or no care. Its large corymbs of white flowers are conspicuous in September among the shrubbery, when most other plants have succumbed to the dry weather.

The peonies and the irises are the great standbys for early summer bloom among the hardy perennials. The hybrids of the German iris are those usually planted, but planters ought not to be overlook the desirable qualities of Iris Siberica. It comes into flower late after all the German irises are gone, and its deep blue flowers, growing on tall stems, are sure to prove a delight.

The American crane's-bill (Geranium armenium) is a stately border plant, seemingly very hardy, and produces its interesting pinkish to crimson flowers for a long time in the early summer. Young plants spring up from self sown seed, and it seems likely to maintain itself without a great deal of care. The plant is robust, grows about three feet high, and its spreading top produces an immense amount of bloom. The plant is said to be a native of America. The Spanish crane's-bill (Geranium ibericum platypetalum) is a smaller plant with blueish flowers. It seems to be at home here and equally hardy.

Chrysanthemum coccineum, the familiar pyrethrum of the gardens, in its many forms is one of the best early flowers of the compositae, but we hardly expected to find a hardy chrysanthemum so stately and floriferous as the Giant daisy, chrysanthemum uliginosum. It blooms very late in the season, grows four feet high, branches profusely and produces great quantities of daisy-like white flowers, two inches in diameter. It is said to be a native of Eastern Europe.

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Paynesville Trial Station.

FRANK BROWN, SUPT.

Many things that are settled facts in other parts of the state are still experiments here. One great drawback to an intelligent report is that much of the fruit stock shipped into this country has not been true to name. For instance, six Anisim trees, purchased from a supposedly reliable firm, bore Whitney No. 20 apples, Wealthys proved to be Malindas, etc. Therefore it is necessary in getting the experience of others to be on the ground and see the fruit.

One thing we have learned in this locality is to be very careful about pushing our trees the second year after setting, as the first year seems to be given to growing roots, and if the ground is highly fertilized more top will grow the second year than the average tree will stand. The wood seems to be soft in those cases, and the tree is liable to die the second winter after setting. Some varieties are more troubled in this way than others. The remedy is, do not cultivate too late in the season and fertilize very carefully the second year.

Among the plums sent us by Prof. Hansen, during the spring of 1907, was one named Wastesa. The trees were set in nursery rows and made a wonderful growth the first year, and to our surprise some of the trees fruited heavily this last season, and the fruit was certainly beautiful, being large, very solid and heavy. The skin has a blue cast, and the flavor is all that could be desired in a plum.

The Sunbeam raspberry is another of Prof. Hansen's creations that has given us much pleasure. The canes are large and strong and, although they grow until late in the season, the wood ripens up to the tip of the cane. They came through alive to the last bud last winter, producing fruit abundantly this season. The quality of the fruit is of the best, being large and meaty. Many of the new canes bear fruit the first season, thus prolonging the season several weeks. This does not seem in the least to damage the canes for their next season's work. The Sunbeam certainly promises well.

Stearns county is supposed to be out of the grape belt, but the large bunches of luscious fruit, colored as nicely as California could boast, give us ground to claim that we can grow grapes. No one need be surprised if we yet add bananas to our fruit list. Our most successful grapes were Concord and Beta.

Other kinds of fruit are being tried and will be reported upon later. Of course we grow most of the old standard varieties of fruit.

We are much interested in the growing of perennial flowers here at the station, also shrubbery. Twenty-seven varieties of iris

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are growing very successfully here, and over one hundred varieties of peonies, besides some new ones, that will be reported upon later.

The growing of evergreens from seed is one of the leading industries at this station. A trip to the seedling beds would convince the most skeptical that evergreens can be grown in this northern country. We grow them in the virgin soil of the woods, rich in leaf mold, where natural conditions prevail, only a trifle tamed and guided by the hand of man. We grow nearly all of the spruces, pines, concolor fir, etc.

We hope to devote more time, next season, to true plant-breeding. We still hold ourselves in readiness to test anything new in the line of either fruit or flowers.

Sauk Rapids Trial Station.

MRS. JENNIE STAGER, SUPT.

Our apple orchard, which is situated on a northern slope, has never been affected with blight with the exception of one tree, which we cut down and burned. This year we had an over-abundance of fruit, and were obliged to thin it out severely to save the trees. We sold the first Duchess apples August the second and the last, Sept.

Mrs. Jennie Stager's experimental strawberry beds on her place at Sauk Rapids, Minn.

the thirteenth. The Wealthy also bore heavily, as also did the Malinda. The fruit of the Malinda was scabby notwithstanding they

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were sprayed. Our Hibernals were nicer than ever before. We had very few plums, attributable to heavy frosts when in blossom.

Of the apple trees sent out in the spring of eighteen ninety-five, budded on Pyrus baccata stock, and planted by themselves, only six are alive. Three of those have nice looking apples this year. They were left to ripen, and as there was much to do, did not look at them often. About the last of the season, I found them covered with round holes, not quite half an inch in diameter. In cutting into them, we found a black bug striped with yellow, half an inch in length and almost as wide, with a scaly back. We put them in a glass can intending to send them to the Experiment Farm. After two weeks they were still alive, but the next day a boy who worked here had drowned them. I was very glad the trees were isolated from my regular orchard.

Strawberries were a good crop. We planted five or six new kinds from Kellogg's pedigree plants. Have a good stand of plants, and next year will tell what they are worth. Had a fair crop of bush-berries, but gooseberries and currants were a poor crop, while blackberries bore not at all.

Waterville Trial Station.

S. H. KENNEY, SUPT.

Apples about two-thirds of a crop, so that home grown apples were a drug at home where grown, and plentiful and at reasonable prices in most of the cities in the state. I believe that the experience at many experimental stations is that with suitable crab roots it is now possible to grow most of the commercial varieties with which but a few years ago we had made repeated failures; that some crabs have enough vitality to sustain tender varieties that we could never grow before. This alone is worth all the efforts that have been given in this direction. It is easy to see that in the near future our prestige as an apple state will take front rank. With me the Gould crab, the Alaska, as far as I have tried it, and the Hibernal can be depended on. There may be other varieties that are giving equally good results. Malinda on the Duchess has been a success at this station. Northwestern Greening and Missing Link on crab have never failed; they have seen thirty below zero without damage. Mr. Eugene Cooly, of Morristown, is making a success with Ben Davis, high in color, high

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in flavor, on the Peerless. Elias Kenney is having fine success with Jonathan on Hibernal. They grow in clusters same as Transcendent. Market quotation $6.00 per bbl. They do not fall till ripe.

The top-working on crabs greatly enlarges the list of long keeping that can be stored in the cellar and sold at home, saving transportation and preventing an overcrowded market. While I think the Wealthy the best of all, it is not a real winter apple and cannot be long kept except by cold storage. My experience with Rhode Island Greening this past season, the Baldwin, Russet, Pound Sweet and other kinds, also Ben Davis, on Gould crab, leads me to believe in time we shall see the greatest success. While the grafts of many kinds are not old enough to bear, those that have borne I feel have repaid the labor in the results attained.

I have experimented with a peach that has grown successfully in Iowa, called the Iron Clad. I have them one and two years old. This fall the wood ripened up so well that I hope soon to obtain results. This is the peach Mr. Brackett, from Washington, told us about two years ago.

Strawberries. The drought gave us a small yield at this station. Raspberries. The same cause applied to raspberries. The Sunbeam raspberry the past season did not yield as well as the first year but stood well for hardiness. The South Dakota sand cherries have not borne with me. I have No. 7 and No. 8. The Houghton seedling and the Elliot gooseberries bore a fair crop. Currants: Red Dutch, White Grape, Stewart's Seedling bore about one-half crop.

The knowledge I have gained at the state horticultural meetings in the past forty years cannot be measured by dollars. The growing of apples and fruits has added new pleasure, and from the large membership of our society I will believe it has helped us all.

About spraying: I gave my orchard one thorough spraying with bordeaux mixture and six pounds of arsenate of lead to fifty gallons bordeaux. This was not sufficient. The insects increase as fast as the fruit trees. We shall have to fight to get the best results.

Healthy Foliage is as necessary to the growth of the plant as healthy lungs are to the life and growth of the animal. When leaves are killed by blight, the result is the same as if eaten off by bugs. Our crops are damaged more or less nearly every year by some form of blight. Bordeaux is the preventive if properly and frequently applied and is becoming more generally used each year. This mixture cannot be applied by a common sprinkling pot, and some of the so-called power sprayers are nothing more. A good brass force pump with good agitator and double vermorel nozzle is the only successiul tool to use for this work.

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West Concord Trial Station.

FRED COWLES, SUPT.

This has been a good year for trees as well as weeds to grow, and all trees and plants have done well. We have tested several new varieties of apples from Mr. A. D. Brown, of Wis., also from C. G. Patten, of Iowa. All are doing well but have not fruited yet. I also have some of Mr. Stifter's new grape vines. I just planted them last spring.

"Fred" Cowles, West Concord.

Our apple crop was very good, especially where our trees were standing in the sod. I find that on my soil apple trees bear better if the orchard is seeded to clover as soon as the trees come to bearing size. Where the trees are cultivated and kept clean, they grow too fast and do not bear well.

We sprayed our orchard this spring and several Longfields trees we could not reach only from one side. These were large trees. When we gathered our fruit we noticed that on one side of these trees the fruit was much more perfect than on the other side. Then we could see it was in the spraying. I believe in spraying thoroughly,

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and we will have perfect fruit. We found no wormy apples in our orchard, while our neighbors that did not spray complained of their apples being so wormy.

Our strawberry crop was very good considering the plants, which were very scattering. Our bed that we set this spring is a perfect stand and a beautiful bed of three acres. We like the Dunlap, Warfield and Enhance. We use rye straw for covering and cover as soon as the ground freezes sufficiently to hold up a team and wagon.

Raspberries did well. I like King and Ironclad for red and Older for black. King is much more easily picked than the Ironclad, but the latter is a nice berry and a good bearer and valuable for late use.

The Carrie gooseberry came into bearing this year, and we are well pleased with them. Some of our two year old bushes were well loaded with fruit and have made a fine growth for another year.

We are testing some of the newer ornamentals and will be able to report on them another year.

Effects of Deep Snow on Trees.

ALFRED TERRY, SLAYTON.

I suppose it was on account of my having suffered from the breaking down of trees during last winter's snowstorms that our secretary has called upon me to write a short paper upon the above subject.

My experience had been very little until last winter, when I found that the lower branches of those apple trees that I had not trimmed to a high trunk were almost entirely killed by rabbits, which were able to reach the young wood on account of the snowdrifts beneath them. I doubt though if the loss of these branches caused much of a loss in fruit to me.

My pine grove, consisting of Scotch and Austrian pines, however, was very badly broken down and, I believe, will never wholly recover its beauty. I learned this, that the Austrian pine branches would bend under the weight of snow and not be injured while the Scotch pine broke easily, few of them escaping mutilation either of the root, trunk or most of the branches, and in many cases of all three. My bull pine, spruce, red cedar and white cedar, like the Austrian pine, bent under the weight of snow but returned to their normal posi-

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tion in the spring. I took the pains to examine the evergreens on other people's land in this county and found practically the same result as on my own.

We probably may not have such large snowdrifts in the next thirty years, and for that reason I should plant just as I did before with the following change: I would mix bull pine and Austrian pine throughout a grove of Scotch pine so that in the event of unusual snowdrifts the two former species would save the ultimate appearance of it.

As to the apple trees I would trim them from the time I first planted them (in this part of the state) quite high and plant them

Evergreens buried in snow at Alfred Terry's, Slayton; winter of 1908-9.

very far apart each way, thirty by thirty feet or, better still, forty by forty feet, thus making the drifts harder to form and branches more out of the reach of rabbits, besides giving the owner an opportunity to put lath, like a curb, round the trunks, thereby preventing injury from sun-scalds as well as from rabbits. The value of making the protection of lath is that the wire to which they are attached is so easily unfastened and removed when there is need to clean the trunk and replaced when that is done.

Mr. Wyman Elliot: What effect did the snow have on your fruit trees?

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Mr. Terry: I was fortunate in that respect in that I lost only the outer limbs of trees. I did not have any tree break down, but it pulled down the outer limbs.

The President: That was due to the settling of the snow crust?

Mr. Terry: Yes, sir.

The President: Did you try scattering anything over the crust for the purpose of breaking it up?

Mr. Terry: No, sir.

The President: I should have scattered sawdust over it.

Mr. Elliot: How would salt work?

Evergreens buried in snow on lawn of Alfred Terry.

The President: You want something dark. If you will scatter sawdust over it, it will break up the crust; otherwise it will jerk the limbs right out.

Mr. Dewain Cook: At my place the crust usually goes clear down to the ground.

The President: Of course, if it is solid that is different, but you often get a crust two or three inches thick. The settling of the snow was probably the reason for breaking the limbs. You have noticed where there is a solid matter on the snow it will melt all around it. It might not always save the trees, but it makes quite a difference.

Mr. Terry: That is something I never knew before, but I shall certainly be glad to try it when the opportunity offers.

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Strawberries for All.

N. E. CHAPMAN, INSTITUTE LECTURER, OWATONNA.

The purpose of this paper is not instruction but exhortation. I would not presume to instruct the members of this society, the horticulturists of Minnesota, assembled for their annual meeting, but I would incite them to efforts that will result in "Strawberries for All".

I would have fresh strawberries upon the table of the farmer and city-dweller, whether rich or poor, for at least one month of the year. I would have three quarts of ripe strawberries consumed daily by the average family in the month of June. At three boxes for a quarter for our 400,000 families, these would have a value of $100,000 per day, and for the thirty days of June, $3,000,000 in the coin of the realm.

Not only so, but I would have the equivalent in money value, of "three boxes of strawberries", in native grown Minnesota fruit, currants, gooseberries, cherries, raspberries, blueberries, blackberries, grapes, plums and apples consumed daily by each family, each day in the year. It would be for the health and well-being of our sons and daughters—of every citizen of the commonwealth. I care not if the cost shall be $36,000,000, and it take the milk checks of the great dairy state to pay the bills. I would have these millions and more, not to supply the cravings of a depraved appetite but to satisfy the natural yearning for Eden's fruits. I would spend these millions for *apples* and *berries,* instead of *tobacco* and *beer.*

The mission of this society or the work of its members will not be accomplished until each one, like leaven, in his or her community shall bring it to pass that there shall be fruit and strawberries for all.

I am aware that this delicious fruit is on the market in our cities and in some towns for four months of the year, but they are not within the means of the masses. I appeal for Minnesota strawberries grown on each one of our 200,000 farms, on all suburban acreage, on every village or city lot. There is no legitimate excuse that I can conceive of why this cannot be accomplished.

There is not a tillable acre within the boundaries of the state where strawberries may not be grown, strawberries of the highest quality, that win the gold, silver and bronze medals in competition with the world.

Why should not the "dwellers of the land" have an ample supply of this fruit, whose kindly office is to supply to our sluggish systems in the springtime its beneficent acid, diluted and flavored by its water and sugar and its most delightful aroma. What fruit is more pleasing to

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the eye, fragrant to the sense of smell or delicious to the taste. Poets have sung its praises since the day of Virgil. To the one who exclaims, "What is so rare as a day in June?" We answer, *Minnesota strawberries.*

There are several essentials in strawberry culture. The first is *one dollar* for membership in the Minnesota State Horticultural Society. This brings one in touch with over 3,000 progressive horticulturalists, brings to you monthly the ripe experience of successful growers and gives you as a premium that standard in horticulture, "Green's Amateur Fruit Growing." I refer you to its pages for directions in strawberry culture that are lacking in this brief paper.

Strawberry field of Albert Czantskowski, Delano, Minn.

A second essential is a plat of ground owned or rented, sufficient to raise the family supply. I have grown them on black loam, light sand and heavy clay. Use any soil you have and be confident that your strawberry bed will repay all your labor bestowed.

A third essential is plants. Buy these of some reliable dealer as near your own locality as possible and of varieties that have been proven to be adapted to all conditions. My first plantings in Minnesota were of six varieties, which may be proper and profitable for the commercial grower. My second planting was only two varieties and all subsequent plantings just one, the survivor of the fittest, the Senator Dunlap. I may call this the farmer's strawberrry, for I have seen it under all conditions, from Stewartville to Duluth, from Luverne to Detroit, and it "makes good". It has proven itself to be the most persistent and tenacious of life, most easily cultivated, edible on the table and salable in the market.

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The fourth essential, and a most important one, is a determination to have strawberries of your own growing. There is health, pleasure and profit in a strawberry bed. From a plot sixty by one hundred and thirty feet, on light sandy soil, we have had an ample supply for a family of five; for visitors unnumbered, so neighborly and friendly when fruit is ripe; and besides sold 500 quarts, that more might profitably share the pleasure given by that little bed. A neighbor on a bed eight feet by fifty-six picked one hundred and seventy-one quarts of delicious fruit.

I have found an old neglected garden plot to be the worst possible place for the cultivation of strawberries. Use ground that has been well fertilized and in a hoed crop or clover the previous year. I would not have you fail through mortal combat with weeds. It is considered orthodox for an institute worker when giving minute directions in strawberry culture to insist that all blossoms should be picked off the year of setting, that the plants may build up crowns and throw out runners for the next year's crop, but I have stood before an audience composed of farmers seventy-five per cent of whom were renters. May I be forgiven for saying, set strawberries, let them blossom and fruit, eat, drink and be merry for tomorrow—you may be in Dakota, Manitoba or Texas.

This paper has reached its limit in time, and accomplished its purpose if its emphasis on the four essentials in strawberry culture shall linger in the memory, stimulating the efforts of members of this society, and all who shall become members, to bring to pass the production of native fruits of all possible kinds to adequately supply the needs of the commonwealth. May the snow cover lovingly during the winter's sleep, the winds blow softly when springtime comes, and the sun shine brightly down upon the ripening fruit of 400,000 strawberry beds in the state of Minnesota. Then shall there be "Strawberries for All"!

Mr. R. A. Wright: I would like to say just a word on that paper. It was a very good paper, very fine in every way, only I take exception to the berry he mentioned, because I heard more complaint during the past year about the Senator Dunlap than about any variety grown. The trouble is that it makes too many plants, and the general grower does not take the pains to cut out the runners, and it chokes itself. That is my experience, and it is the experience I have heard from others. This last year there has been a great deal of complaint.

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Report of Committee on Examination of the Minnesota State Fruit-Breeding Farm.

To the Minnesota State Horticultural Society:

Gentlemen:—E. F. Pabody and F. H. Boardman, having been appointed by your executive board to visit the Fruit-Breeding Farm for the University of the State of Minnesota and report thereon, do hereby make the following return:

We visited the said farm in October, spending several hours thereon. We went over the entire tract, which consists of about eighty acres, and made a careful examination of the same. The land is a beautiful tract of splendid soil in Carver County, about two miles distant from Lake Minnetonka. It would be difficult to find (all things considered) a more desirable eighty acres in the entire state than this for the purposes for which it is designed. The improvements consist of two dwelling houses, utilized by the manager, Mr. Chas. Haralson, and his assistants, a greenhouse for plant-breeding, an excellent cement storage cellar for nursery stock, a very good moderate sized barn, a well 250 feet deep, with two-horse power gasoline engine for pumping, and a neat little cottage to accommodate the university and other visitors.

There have been about 80,000 seedling plants grown on the grounds this year. 13,000 of these are grape seedlings from the hardy variety known as the "Beta"; 14,700 apple seedlings, 20,300 plum seedlings, 20,000 strawberry seedlings, 10,000 raspberry and blackberry seedlings, and smaller quantities of native fruits, including sand cherries, high bush cranberries, Russian pear seedlings, etc. There was a total of 2,606 raspberry seedlings fruited this year, and from these 115 were selected as being worthy of further trial; all others were destroyed. There were 3,604 strawberry plants fruited this year, of which 227 were selected as being worthy of further trial. We were shown a number of crosses between the Japanese and native plums which give promise of furnishing the state with another hardy fruit of superior quality.

About 250 bushels of oats, 300 bushels of shelled corn and thirty tons of hay were the farm crops grown this year. Much of this corn was grown on new breaking, and its fine quality was a surprise to us.

The clearing of some land and the draining out of some wet spots that were heretofore useless, thereby making the entire farm, with no waste spots, useful and attractive, has been a wise move on the part of the management.

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The general appearance of the farm was neat and reasonably free from weeds. We carefully looked about to see if there was evidence of loafing or slovenly work on the part of employees, but found nothing of the kind.

Glimpse of farm house at the Minnesota State Fruit Breeding Farm, at Zumbra Heights (Excelsior), Minn.

In closing this report, we desire to express our congratulations to the people of Minnesota in having in the state an institution with such possibilities for great benefit to all the people as this. Taking into consideration the comparatively small expense in endowing and maintaining the fruit-breeding farm, it is hard to conceive of anything that could be done by the state for all its people that would declare larger dividends in money, morals and correct living than is

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now being done and should continue to be done at the state fruit-breeding farm. To Professor Samuel B. Green, president of the State Horticultural Society, as well as to the entire executive board, great praise is due for the untiring energy, devotion and ability displayed in founding and maintaining this institution.—E. F. Pabody, F. H. Boardman, Committee.

Annual Report, 1909, Minnesota State Fruit-Breeding Farm.

CHAS. HARALSON, SUPT., EXCELSIOR.

Considering the fact that the fruit farm is new and that much preparatory work has been necessary, the progress made during the past two years has been exceptionally good, and much work has been done that will be of value to Minnesota horticulture. The correspondence has increased, and the fruit farm receives many letters asking for information on a great variety of subjects relating to fruit growing—and plant-breeding especially. Trees and plants have made a wonderful growth the last year, and things in general look very encouraging at the present time.

Many trees and scions for trial, and much suitable material for plant-breeding, have been received. We have approximately 100,000 seedlings on the place for fruiting. These consist of 13,786 grape seedlings, most of Beta grape; 9,366 seedlings of raspberries, blackberries and blackcaps; 15,000 apple seedlings, 20,240 plum seedlings, 1.000 sand cherries, 20,000 strawberries, and many others, and the number will be increased from year to year.

A small cottage, 14x20, has been erected, and an air pressure water tank installed to give us sufficient water pressure.

The drainage system, which was put in a year ago to drain low places on the fruit farm, has proven a success, and will in a short time pay for the amount of money spent on it.

Plum hybrids, such as Burbank x Wolf and Shipper's Pride x Wolf, with very few exceptions came through last winter without any injury, and some of the hybrids, two-year-old trees, are now full of fruit buds.

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Plant-breeding. The improvement of varieties of fruit in the origination of new varieties by crossing and selection promises to be of great value to the fruit growing interests of Minnesota. At the present time there is a clamor for varieties of better quality, more hardy and disease resistant than some of our leading commercial varieties. This is an important subject, and it is one that is demanding very serious consideration. We are growing a large number of seedlings that are the results of crosses of certain varieties, which, it is thought, may possess the desired characteristics for a variety particularly adapted to this section of the country. It is realized that much work will need to be done before the desired results are obtained, but if such a variety should be produced it will be of inestimable value to the fruit growing industry of the state.

Applying the pollen with brush in the act of cross-pollination, at the State Fruit-Breeding Farm.

The work is carried on in several different lines. Our native plum has been crossed with the California, Japanese and European plums; our native and Beta grapes with the best commercial varieties; hardiest apples with the long keeping and high quality eastern apples. With raspberries, blackberries and blackcaps we aim to combine hardiness, size and quality. Some work has been done with cherries, pears, roses and gooseberries, which promise an interesting field of labor. Some of the seed resulting from such crosses has been saved to be planted next spring.

The work on strawberries and raspberries shows results more quickly. Last summer, there were in fruiting at the fruit farm 3,604 strawberry seedlings, of which 227 were selected, and 2,606 raspberry seedlings, of which 115 were selected. These varieties are the results of careful crossing of the leading commercial sorts. A large number of remarkable berries were obtained, most of which, so far as the past season is showing, promise to be valuable. The best of these will be planted in plantations on the fruit farm that they may be more thoroughly tested, and after two more seasons the most promising ones will be sent to fruit growers and others for further testing in different localities.

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Our fruit-breeding is done mostly in the greenhouse during winter and spring. For this purpose pots and tubs are used for growing the fruit trees, of which we have about 250 in good condition for fruiting next spring. Several thousand trees have been propagated for the same purpose.

The work for the coming year will be along the same lines as last year, but on a larger scale. About 400 strawberry plants are in the greenhouse now, and fruit trees will be started later on, in order to keep the plant-breeding work going on the greater part of the winter and spring.

In conclusion I would say that we desire the co-operation of the members of this society and many others to help the work along in making our State Fruit-Breeding Farm a success for the best horticultural interests of the state.

Growing Plums.

W. A. W. SVENDSGAARD, ERHART.

Growing plums is easy, like everything else, if we know how, but lacking that knowledge much valuable time is spent in experimenting.

Father, who was an excellent teacher and man but an impractical farmer, had planted about fifty plum trees on a sunny southern slope, well sheltered to the north. They were placed about sixteen feet apart. I am uncertain as to the varieties, but believe the De Soto, Forest Garden and native plums are found among them. It may be of interest to note here that though the native trees and those of the cultivated varieties in their immediate neighborhood have been given the same care as the other trees, little or no fruit have been found on them.

Father always insisted that the trees be well manured and disliked to see the chickens among them. Thus far extended his care. The trees bore fruit but so little that but for father's sake we would have left them to their own fate.

After a time father became an invalid, and the trees were left in my care. The first thing I did was to prune, and have since done so every year. Although most of the pruning has been done in the fall, I have pruned at about all times of the year except when the trees were in blossom or in fruit. Pruning should not be done too far up from the ground, as the tree is liable to sunscald. I consider pruning of the greatest importance in plum raising, as the more I have pruned the greater the crop.

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Late in fall or early spring I place about half a wheelbarrow of old straw or manure around the base of each tree. I allow my chickens to roam at will, as among their many services the least is not that of keeping the ground loose around the trees by scratching in the straw.

All the loose straw I remove when the grass becomes green. This grass is timothy which I have sowed in between the trees. It gives a firm sod not easily washed out. I cut it in July which will give it another growth by the time the plums are to be gathered.

The green lice is the only insect with which I have been troubled, but by spraying with the bordeaux mixture, with a little paris green, I have soon rid the trees of the pest. Though the crop this year was rather light, I had trees that bore a bushel of plums.

Side view in plum orchard No. 1 of the late O. M. Lord, Minnesota City, Minn.

In marketing the fruit I use the four quart baskets, selling them at 20 or 30 cents, or about $2.40 a bushel.

I have found that my customers like the plums about half ripe. When picking them I lay on the ground beneath the tree, and close to the trunk, a large circular piece of clean muslin which I have had made for that purpose. Then by shaking the tree all the plums ripe for market will fall on this with probably a few rolling off into the grass, but they are easily gathered and sorted.

Many people when planting trees seem to trust in the Lord or Mother Nature, because almost invariably they will only plant the tree and leave it to the uncertain future. Trusting in a higher power is certainly commendable, but the use of the pruning knife is little less valuable when the beauty and the use of a tree is considered. I feel positive that a wise use of that excellent instrument will work wonders with any tree, whether fruit bearing or not.

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SECRETARY'S CORNER

HAVE YOU RECEIVED THE 1909 REPORT.—Members living convenient to the office are requested to call there and secure the report personally, as it will not be mailed to such except upon direct request. Members of the the auxiliary societies in applying by mail for the report should in all cases remit the amount of postage, seventeen cents, which is all the additional expense which is connected with relationship in this society through the medium of the auxiliary societies.

HAVE YOU SENT IN A NEW MEMBER YET?—Memberships received early in the year are of much more value to those receiving them and insure a more nearly complete set of the magazines for the year. Back numbers of the magazines to the beginning of the year are always sent to new members as far as possible, but it often happens that we are out of some numbers. This matter of new memberships should receive early consideration for best results. Consult the list of premium books in the society folder.

MINNESOTA PREMIUMS AT NATIONAL APPLE SHOW.—The Jewell Nursery Co., of Lake City, sent to the Second National Apple Show at Spokane, Wash., last October, one barrel of Wealthy apples and one barrel of N. W. Greening apples, to compete for premiums offered for the best apples from the middle west. The Wealthy took the first prize of $100.00; the N. W. Greening took the second prize of $50.00. For general excellency, they were awarded a diploma. So far as we know this is the only exhibit sent to the Second National Apple Show, from the state of Minnesota. It should give great encouragement to people growing fruit in this section of the country.

ANNUAL MEETING MINNESOTA STATE AGRICULTURAL SOCIETY.—This important state organization, which operates the great Minnesota State Fair, held its annual meeting in St. Paul, continuing three days, Jan. 18-19-20. The program, which was of much practical value, covering a wide range of topics, was under consideration the first two days of the meeting, the last day being occupied with the transaction of the regular annual business of the society. It was an occasion of unusual interest on account of a contest over the presidency, which resulted in the election of Mr. J. M. Underwood, of Lake City, as president, though by the narrow margin of seven and one-half votes in a total of 319-½ votes. As Mr. Underwood had the unanimous endorsement of the members of this society at our late annual meeting, we are naturally well satisfied with the result. A board was elected which represents the same comparative position which Mr. Underwood occupies in state fair matters. The outcome of this, with the general support of Mr. Underwood's contestants, which is assured, gives promise of the most successful fair which this state has ever held. The following is a full list of the officers elected:

President, J. M. Underwood, Lake City.
First Vice-President, C. M. Griggs, St. Paul.
Second Vice-President, Eugene J. Stilwell, Minneapolis.
Managers: F. W. Murphy, Wheaton, re-elected; T. H. Canfield, Lake Park, vice W. E. Lee; W. W. Sivright, Hutchinson, vice Dar S. Hall; C. P. Craig, Duluth, vice J. M. Underwood.

Later, at the first regular meeting of the board, Mr. C. N. Cosgrove was re-elected secretary, and Mr. M. T. Dunn, of Brainerd, was elected treasurer.

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PROF. GREEN'S "AMATEUR FRUIT GROWING."—This invaluable little treatise on fruit growing, written to meet the peculiar needs of this region, still continues to be the most popular premium book offered by this society for securing new members. Through accident it was left out of the list of premium books which is to be found in the new society folder, but it is offered just the same, and any of our members securing new members can have this book for the asking, either for their own use or to give away to the new member, as may be preferred. Have you sent in this new member for the year 1910 as yet? Take an evening off and do a little missionary work for the society along this line.

THE NURSERYMEN AID THE SOCIETY.—A large proportion of the nurserymen of the state have undertaken through their agents and correspondence to place the society folder in the hands of the planters of the state, and in addition to this are offering a membership in the society as a free gift to each person purchasing an orchard of 100 trees. It is thought any planter with as large an interest in horticulture as this is likely to remain a permanent member of the society, and that is the kind of memberships we are looking for. There ought to be an increase of a thousand names to our roll the current year. Whether this ambition is realized or not depends upon the measure of interest in this direction maintained by our membership.

DELEGATES TO SISTER SOCIETIES.—Mr. S. H. Drum, of Waseca, attended the annual meeting of the South Dakota Society, which was held at Yankton on Jan. 18, 19, 20. Mr. A. B. Lyman, of Excelsior, was appointed as delegate to the annual meeting of the Wisconsin State Society, but at the last was unable to attend on account of sickness in the family, and Prof. LeRoy Cady, of the horticultural department of the State University, went to the Wisconsin meeting in his place, the meeting being held in Madison at the same time as the South Dakota meeting. Reports from both these delegates are in the hands of the secretary, but came just a bit too late to find place in the February number. Enthusiastic and successful meetings are reported from both societies.

RETURN THE SUPPLEMENT PROMPTLY.—Connected with this number will be found a supplement through the medium of which we are endeavoring to reach that class of persons throughout the state who ought to be members of this society. Will you not, dear fellow member, fill out and return this supplement promptly to the secretary? A perusal of its contents will show the advantage to yourself as well to the society in this course. The questions asked therein also it is very desirable should be answered as upon the comparative interest manifested in these answers is to be based in large measure the character of the program of the next annual meeting. Shall more attention be given to orcharding at our annual meeting than heretofore? is a practical question of large importance.

PASSING OF PROF. WM. ROBERTSON.—This valuable and valued member of our society died suddenly in the sleeper on his way down from Crookston—where he occupied the important position of superintendent of the experiment station and president of the Red River Valley Agricultural College—to an attendance at the Minnesota State Agricultural Society, to which he had been sent as a representative of a local county organization. His death occured on the night of Jan. 19th. Prof. Robertson had not been in good health for some time, but his early demise was not looked for, and news of his death came as a great shock to his large circle of friends and acquaintances. Suitable resolutions were passed by the State Agricultural Society, in the sentiments of which all earnestly joined.

Prof. Robertson had been a member of this society for many years, one of its most earnest supporters and effective workers. His services to the cause this society represents will be greatly missed.

We expect to publish a suitable biography of our departed friend in some early issue of our monthly.

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OAKLYN PARK, LAKE CITY, MINN.
THE VIEW SHOWS THE CITY HALL, WHERE MEETINGS OF THE IMPROVEMENT CLUB ARE HELD.

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THE MINNESOTA HORTICULTURIST

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Fifth Year in Improvement Work.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

At the risk of appearing tedious, I have consented to give a brief report of the fifth year in improvement work in our small city. I do this in the hope that it will influence the women in places of similar size and under to organize for the improvement of their home towns and, when once started, to keep going. It is impossible to get all the residents of a place interested and at work at the same time, but it is possible to keep some at it some of the time, and in this way form a nucleus from which the impetus may be sent forth when needed work arises. It will be found that some people will work and give for a park that would not for a cemetery; for school grounds, that would not for either of the above, and so on. So it is useless to attempt to harmonize all along one line—it is a waste of effort. It is better to make a strong endeavor to bring all into line some time on something, as in this way a united interest will be gained in the welfare of the town.

Frequently I am asked how to organize, and invariably I say, "Start with two or three, and I will explain further." A club of this nature should have president, vice-president, recording secretary, corresponding secretary and treasurer, and these five officers constitute the executive committee. This committee considers, formulates and decides upon all plans for work; names committees, arranges programs for public meetings, where prominent citizens may be called upon to exploit their especial line of work or amusement. All the ministers, doctors, lawyers, editors, school teachers, councilmen, as well as private individuals, should be drawn in to identify themselves with progressive effort in some direction. No reputable business but what could be helped by coming before the people at the public meetings and relating what has benefited it. It will necessitate the speaker studying somewhat in preparation, and in trying to give knowledge his own eyes will be opened to many things he might do. A small executive

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committee is easily called together, and if only harmonious working members are selected there will be very little wasted time. It is inadvisable to discuss plans in a general audience or before many. It causes conflict, and the many opinions expressed, many of them widely variant, will only serve to hold apart the differing ones. In the conferences of such an executive committee the many sub-committees may be appointed, always securing those who will work well together. The above has been the basic principle upon which our club has worked. It may not work well in all places.

During the past year we have been largely content in simply showing great interest in individual effort, urging every one to "brush up" for the many visitors expected during the season.

Our band boys for some years have felt the need of a band stand and have given several entertainments to raise money for this purpose. They had in mind a cheap wooden structure; such a one could not be allowed in our beautiful little Oaklyn Park, neither would it look well next our neat city hall. So we told them if they would put up a nice stand we would help them out. The construction of the building was turned over to the park board. When completed the bills were O. K.'d by these gentlemen and then given to the council, and it settled the same, much to our surprise and pleasure, for we had use for all the money at our disposal. The whole town can now point with pride to "our" band stand, and when the many electric lights are turned on it is very attractive, and the "boys" when playing are inspired to do their best. The plan was drawn by one of the members of the park board. The floor is about five feet from the ground, which prevents its free use by the many small children. There are portable steps for the band.

About the middle of summer, the park board learned that a sightly strip of ground lying along the lake front was to be sold and that the prospective purchaser intended putting up a livery stable. Just think of it! The owner was obliged to sell, and $200 was all that was asked for it. The owners of the homes across the street agreed to pay $100, and our improvement club was more than glad to pay the balance. The park board has put in much time clearing and grading, hauling in good soil, and next spring there will be one more beauty spot to mention for Lake City. From this little park the spectator can see the beautiful scenery across the lake in Wisconsin and an expanse of water up and down the lake of three miles wide and twenty miles long. It is the intention to place many seats at this point for the benefit of the people.

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An artistic, sanitary drinking fountain was placed in Oaklyn Park at a cost of $75, and it is much appreciated by the walking public.

We are frequently asked, "How do you protect your flowers, trees, shrubs, your seats, etc., from vandalism?" The more you surround people with beautiful artistic things, the less likely are they to destroy or deface. Teach the children, and through them the parents, to love flowers and nature, and there will be little trouble. You will notice that I say, teach the children and through them the parents. I do this advisedly, for I have witnessed more vandalism committed by "grown-ups" than by children.

"Before." A Lake City lawn. "How, where and what shall I plant?"

There is a tiny triangular park on the lake shore that has a fine turf and a few beautiful trees. A citizen living across the street came to our club and said if we would put two or three seats there he would protect them and keep the grass cut, and this he has done well. Now see the result! During the summer this man's lots as well as the park present a green expanse excelled by no other lawn in the town, and it is a pleasure to us club women to drive past and see the men and sometimes children playing croquet after the day's work is done, or Sundays, when they are cleaned up for the day—and some of us wish that every lawn in town was a croquet ground.

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We have some places for bathing along the lake shore but none set aside for this purpose alone. Now I will take you into our confidence and unfold to you the secret, that our improvement club is trying to get enough money together to put up some neat, attractive bathhouses and secure the services of some one to teach the boys and girls to swim.

"After." The same lawn the second year after planting.

We see so much that can and should be done that it is difficult to control ourselves and to confine our efforts. In the beginning we pledged ourselves to do nothing that was not productive of lasting results.

Puzzling situations confront us now and then. Here is one: There is a dilapidated looking spot along our lake shore belonging to a poor old man. On it is an old, tumble-down barn, which shelters an old horse, that has been working hard for at least twenty years. It is

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the only means of support for the owner. Five years ago this place fretted us, and at different times we would agree that the place must be cleared up, but how and when? The building is too old and rickety to be moved. We have not the money to put up a new one, and if we could it would have to be built so far from the man's home that it would work a hardship to him. The man is old and feeble; and there are other spots that require our attention—and we will wait.

I want to say a few words about our street committee. It is composed of three men, and how they work! To hear them talk you would think they were drawing large salaries and owned the town, from the interest they manifest and the work they accomplish. They have insisted on the city's owning a team of fine draft horses, road plows, scrapers and have purchased a gravel pit. Seven o'clock finds the team at work, with others when necessary. And our streets! They are not all perfect yet, but many of them are a joy and delight to the owners of fine horses.

Apple Growing in Minnesota.

PROF. S. B. GREEN, HORTICULTURIST, ST. ANTHONY PARK.

Minnesota can hardly be looked upon as being one of the great apple producing states, but since the introduction of varieties especially adapted to this section wonderful progress has been made in orcharding. Most of the commercial orchards are young, as it is only within about ten years that growers have felt it safe to plant out apples on a commercial scale. Previous to that time a large part of the apple planting in Minnesota was confined to putting out home orchards and experimental orchards. The yields from these have been very encouraging.

The sections in which apple growing is most practiced, and where in the opinion of our best horticulturists it is most likely to be a success, are on the bluffs along our rivers and lakes, where the soil is a porous clay, often on what we know as "loess loam." The southern counties are generally adapted to orcharding, and north of them, the eastern half of the state north to Mille Lacs. This is a large area and produces some very excellent fruit. Fruit is raised more or less west and north of this area, but in a small way, and I hardly expect it to develop as a commercial industry in this latter area. However, commendable progress is being made in raising apples even in western Minnesota, but in such locations orchards must have wind protection, and in other ways require more care than in favorable locations.

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An avenue of Peter apple trees in orchard of O. J. Evans, at La Crescent. This is the last valuable seedling of the late Peter M. Gideon. Nearly identical with the Wealthy and of equal value.

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I do not think there is any section of Minnesota that is well adapted to general farming but where home orchards should be attempted, and with reasonable prospects of success if the matter is carefully studied. It is true with apples, as with all other vegetation, that as they reach the limit of their growth more care must be used in managing them. We have solved the matter of hardiness in varieties in quite a satisfactory way. I think the most we have now to fear from is root-killing, and the danger of this may be entirely removed by having the soil about the trees well mulched in winter. If they are not mulched with snow by the first of January, then an artificial mulch of stable manure or other litter should be supplied.

Of course, in Minnesota, as well as elsewhere, fruit growing is dependent a good deal upon the ability of the grower to get results. I am told by some of the best authorities in the older and most favorable fruit growing districts of Washington and Oregon that probably not over fifteen per cent of those who go into commercial orcharding in those sections succeed, and I am inclined to think that fully that proportion succeed here.

The varieties of apples commonly grown in the older apple orcharding districts of this country are not satisfactory in Minnesota, and among the newly introduced varieties which we are growing there is a lack of good keeping sorts; hence, although we raise a large number of summer and autumn varieties, so much so in some sections as to glut the markets, yet we are short of Minnesota varieties during the winter.

A fully matured commercial apple orchard in Minnesota in best condition, of improved varieties such as the Wealthy and Patten's Greening, should be worth fifteen hundred dollars per acre if figured on the basis of its returns at present prices. Such an orchard can be grown to maturity in fifteen years, but will be very profitable long before that time as the varieties named come into bearing at an early age.

It is seldom that a purely commercial apple proposition is offered for sale here, as apple growing is generally combined with some other form of agriculture.

I should say that the average net profit per acre from a fully matured first class apple orchard in Minnesota would be about two hundred dollars. The maximum net profit per acre would be about four hundred and fifty dollars.

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The Lessons of Twenty-five Years in the Raspberry Field.

W. H. HANCHETT, SPARTA, WIS.

As I look back over the experiences of years past and realize how the elation from the successes of one season was quickly followed by disappointment and failure the next; how methods which for a time seemed ideal suddenly lost their potency in producing results; and how varieties long considered standards seemingly lost their reliable qualities and had to be placed on the ever growing list of "has beens," I cannot help but question whether I have really learned any lesson of lasting value which I may present to you as a reliable guide in raspberry culture. I have this comforting thought, however, that an experience covering twenty-five years partakes something of the nature of an autobiography, and the only autobiographies which I have felt were helpful were those which painstakingly recorded the most humiliating failures and spoke very modestly of the successes of the author. Truthfully recorded failures are danger signals set by a kindly hand, and how helpfully important they really are! The modestly recorded success is the promised reward for which we strive, and how comforting it is when we have attained it to find that it has not been overdrawn in any way and that our joy in its possession is in no wise marred by the slightest tinge of disappointment!

In dealing with this subject then I shall deal with both success and failure and especially failure, for periodical failure seems to be established as one of the sure things in raspberry culture, and our greatest study must always be along the line of avoiding it as far as possible.

My experience in the raspberry field commenced in boyhood days, when anthracnose, cane blight, root gall, cane borers and the host of the present day afflictions were unheard of, and the lessons we studied were those of variety, adaptability of soils, tillage, winter protection, pruning, harvesting and marketing the crop. Later the problems of combating insect pests and fungous diseases, and the supplying the soil with needed elements of fertility have been added to the list of our studies.

As to varieties: Among the reds, at the commencement of my experience, the Turner was something of a standard, presenting as its claim for favor delicious flavor and healthfulness of cane and foliage. It was too soft and unproductive, however, for a profitable market sort, and as at about this time the Cuthbert was coming to the front

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as a standard of quality, combined with great productiveness and healthfulness of cane (a position which it has retained to the present day, its only fault being that it is rather too tender for distant market), the Turner was discarded. A few years later Marlboro was introduced and won a place as a market sort of extraordinary shipping quality and fine appearance, combined with productiveness and hardiness, although of poor flavor. One of the greatest mistakes we made was in allowing the poor flavor of this variety to prejudice us against it and to prevent our planting heavily of it during its early history. We had not yet learned that fine appearance frequently counts for more

Fruit farm of W. H. Hanchett. His home buildings in the distance.

than real quality in the selling of fruit. Marlboro however seems at the present time to have lost its grip and has become so subject to cane blight as to make it unreliable, so we have had to place it in the list of "has-beens", while the Early King is bidding for its place with fine appearance, productiveness, fair flavor, hardiness and its vigorous and healthy cane and foliage. Other varieties tried and discarded are, Brandwine, unproductive; Loudon, cane subject to fungi and fruit adheres to stem too closely, making it a hard picker; Hansel, unproductive; Eton, fine appearing and productive, but like Loudon adheres to stem too much for picking on an extensive market scale.

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Of varieties among black-caps our experience deals with Souhegan, Ohio, Palmer, Cumberland, Nemaha, Kansas, Gregg and Plum Farmer. These varieties are all possessed of merit, but on our own farm we have discarded them all save Plum Farmer, that being the most profitable with us as a result of its earliness, large size, great productiveness, fine quality and appearance and its remarkable freedom from the attacks of fungi. Gregg is still a standard among growers at Sparta, however, and Palmer is very popular for its extreme earliness among growers on some of the lighter soils.

As to adaptability of soil—with our great variety of soils at Sparta our experience is that any productive soil well supplied with humus and properly drained is adapted to raspberry culture.

In the matter of tillage—in the earlier days there used to be much discussion as to the advisability of keeping the cultivators running or of mulching heavily with straw, but in these later days, with straw getting higher in price each year, I think it is generally conceded that frequent cultivation as late in the season as September 1st is advisable. I am often surprised at gatherings of this kind in this latitude to find that winter protection is still a matter of discussion, for my experience is that it is necessary for best results even with varieties that will bear a profitable crop without it, as they will pay large dividends on the cost of protection.

In the matter of pruning, my experience is that mistakes are more often made in leaving too much bearing wood than in leaving too little. This is especially true with the Cuthbert. In the pinching back of the growing canes, we have come to believe it best not to pinch back red varieties but think it highly important to pinch back the black-caps to make them throw out laterals.

In harvesting the crop, we have learned that attractiveness counts for much and that care must be taken by the pickers not to crush the fruit and to keep it free from stems, dead leaves, etc. We have found the pint box most satisfactory for both reds and blacks. We have found it best to pick reds daily, if possible, and at least not less frequently than alternating days; while blackcaps are best picked not oftener than every second or third day.

In marketing of the crop we have gone through all the stages from delivering direct to the consumer to through the medium of the co-operative marketing association, and while we are aware that conditions should determine the method of marketing we feel that with the conditions in centers like Sparta the co-operative marketing association is the only way. But as that is discussed before this meeting by another I need not touch upon it. In the matter of combating

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the insect pests which afflict the raspberry, we have found our only relief in thorough cultivation, the immediate removal and burning of the old canes, and the frequent planting of new fields to take the place of the older and more badly affected ones. This same treatment applies to fungi as well—for anthracnose seems to be the only one to which raspberries are subject for which science has found a preventive, and we have never found this a serious pest where clean cultivation was given.

The deadly cane blight is the cause of our most disheartening failures and the subject of our most anxious study. We have entertained many theories as to its cause and cure, deducted from our ob-

Uncovering raspberries with the fork after first having plowed a furrow away from the row on each side.

servations in different fields about Sparta, only to try them out on our own farm and meet with disapointment, and our only remedy at present seems to be in planting those varieties least subject to its attack. We have thought sometimes that it was due to a weakening of the vitality of the plant as a result of insufficient nourishment and that its cure would be found in supplying the necessary elements of fertility in the soil and thus adding to the vigor of the plant, and we still think this will help to some extent; but with such varieties as the Marlboro the help is not sufficient to effect more than a slight benefit, possibly because we had not supplied the right proportion of the needed element. We at least feel that this is still a field for investigation with something of a promise of reward. Agricultural investigators are find-

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ing that the souring of soils and the lack of some one of the elements of fertility leads to a weakening of the vigor of the various farm crops, but we find very little data on this point as applied to fruit. Would not investigation in this field be wise?

Mr. Geo. H. Whiting (S. D.): I would like to have him tell us what varieties he is growing.

Mr. Hanchett: I am growing the Early King and the Cuthbert. The Cuthert remains the standard so far as productiveness and fine quality is concerned. Our market is almost altogether a distant market, and the Cuthbert is a fair shipper when picked every day, but when caught by a hard rainstorm we would have some soft stuff on our hands.

Mr. Whiting: You say you raise the Early King?

Mr. Hanchett: We are just beginning, we are just getting well started.

Mr. Whiting: Do you cover it?

Mr. Hanchett: It will produce crops without covering. I have not grown it to a sufficient extent to find out whether it pays in comparison with other varieties to give it winter protection. We have black-caps that bear profitable crops without winter protection, but it will nearly double the crop to give them winter protection. Whether this would hold good with the Early King I am not yet satisfied. I have left up a couple of rows for the purpose of testing it alongside of some protected rows, and next year I may be able to go more into particulars.

The President: What is the value of the fruit crop altogether at Sparta?

Mr. Hanchett: It will run from $50,000 to $100,000.

The President: The larger part raspberries?

Mr. Hanchett: The larger part is strawberries. We have raspberries and blackberries also. The proportion of raspberries has decreased for the last few years as the result of knocking out the Marlboro on account of cane blight. A few years ago we were selling from $25,000 to $30,000 annually, while for the past few years the sales have amounted to only four or five thousand.

Mr. Wyman Elliot: In what kind of soil does the Cuthbert thrive best?

Mr. Hanchett: I think it does well on most kinds of soil, although we have clay and sandy loams about Sparta. It needs plenty of fertilizer, it is necessary to fertilize it, to have plenty of humus in the soil.

Mr. R. A. Wright: I would like to ask Mr. Hanchett how he proceeds to cover his raspberries. Possibly the Wisconsin people have a better way of covering than we have.

Mr. Hanchett: We commence at one end of the row. We have wires to hold the canes up, and we unhook the wires and swing them off to one side, and then we use a flat tined potato fork to put down the vines—you all know what kind of a fork I mean. We dig a little of the dirt away from the side of the plant on the side toward which we want

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it to bend over, and then we insert the fork on the other side of the hill, and one man gently bends the canes over and another man brings the canes together and shovels a little dirt on them. Some growers use plows after the canes are bent to the ground, but at Sparta most of our successful raspberry fields are on the side hills in the timber and the plow is not a success on those side hills, it results in undermining the row, and for that reason we have to be more careful than would be the case if we covered with the plow.

Mr. D. W. C. Ruff: I want to ask about pruning the raspberries—I have reference now to the black raspberries?

Mr. Hanchett: We have found we increased our crop by pruning. The Cuthberts will usually run up a straight, thick stalk, but it is our practice to prune them back in the spring to about waist high.

Mr. Elliot: What do you think of fall pruning?

Mr. Hanchett: It would do very well, but we have found that the extra growth that you would prune off is a help in covering, and for that reason we have not practiced it much.

Annual Meeting, 1910, Wisconsin State Horticultural Society.

PROF. LE ROY CADY, ST. ANTHONY PARK, DELEGATE.

The Wisconsin Horticultural Society held its annual meeting in the Madison Public Library, January 18, 19 and 20. This proved to be a very good place. Both the auditorium and the fruit room were well adapted to the gathering.

A good showing of fruit was made. Exhibits were made by the Warsaw Experiment Station and the Agricultural College, as well as a number of good sized exhibits by individual growers. A few boxes of apples were shown and attracted considerable attention. The varieties used were Northwestern Greening and Gem City. The Agricultural College made a rather decorative exhibit of boxed apples, using boxes holding apples one layer deep. This was attractive and very suggestive of what might be done with the varieties used in quantity. A small showing of grapes was made by one grower. Agawam, Wilder and Lindley were the varieties shown. Among the apples we noticed Northwestern Greening, Gem City, Fameuse, Walbridge, Golden Russet, Longfield, McIntosh Red, Windsor Chief, McMahon, Wealthy, Alexander and Scott's Winter. Not a great many of these are varieties that we are familiar with in our own fruit exhibits.

Sessions were held daily, and two evening sessions and a banquet were held.

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The session Tuesday afternoon was given up to small fruit culture. Reports were read from the different districts of the state in regard to the fruit conditions. The general opinion seemed to be that small fruits had done very well in the sections in which they are grown and had brought good prices. Some of the varieties of raspberries that were well spoken of were the New Eaton, King and Plum Farmer.

Prof. Le Roy Cady, Asst. Horticulturist.
Minn. University Farm School.

Eldorado seemed to be the favorite blackberry. The Perfection currant was well spoken of. Dunlap and Warfield were the varieties of strawberries that were recommended in all sections. In discussing the yield of small fruits, the fact was brought out that strawberries will yield at the rate of about 4,000 quarts per acre, and raspberries about 7,000 quarts per acre if properly taken care of. In the Sturgeon Bay district there seemed to be a falling off in the acreage of small fruits. A large part of the small fruits of the state and a good many of the surplus apples seemed to find a market in Minneapolis. Sparta and Sturgeon Bay are the principal districts growing small fruits and appeared to have good fruit organizations. Other parts of the state are handicapped for lack of a good organization. F. E. Babcock, of Sparta, in discussing the inspection of small fruit thought that inspection should be made of the fruit plantations. He believed that a better idea of the quality of the fruit could be obtained by inspecting it on the grower's land and instructing him in proper methods of packing and grading than to leave all of the inspection for the buyer at the station, as is done in most cases.

Mr. O. M. Taylor, of the Geneva Experiment Station, New York, presented two very able papers before the society. His paper on "Comparison of Tillage and Sod Mulch in Apple Orchards" was

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especially good, and he showed very conclusively by figures and fruit that the tilled orchard produced the best results and was the most satisfactory.

On Tuesday evening, Mr. John Davey, of Kent, Ohio, gave a stereoptican lecture on tree surgery. This was a lecture very largely advertising Mr. Davey and giving vent to some of his peculiar ideas. At the same time it was a rather interesting talk.

Wednesday forenoon was given up to reports of the officers and delegates from district societies and the election of officers. All of the old officers were re-elected, and this meeting was characterized by the harmony and good feeling that seemed to prevail throughout all the sessions, making it a very enjoyable meeting. In Secretary Cranefield's report, he stated that fifty-nine reports showed that a conservative estimate of the fruit raised in Wisconsin would be about 250,000 barrels. Ninety-five per cent of the apples were marketed before December 1st, and most of them by November 1st. The society numbers about 1,100 members, and has shown a very steady increase the last two or three years. About $8,000 is appropriated by the State of Wisconsin for this work. A large part of this money has been expended in different trial stations throughout the state that are managed by the Horticultural Society. Some ten or fifteen trial stations for testing fruit are conducted in different parts of Wisconsin. Some of these made very good returns, notably the one at Warsaw, in Marathon county. This is one of the oldest, and for a number of years has borne fairly well. This year the crop was bought by Mr. W. H. Marsh, and some 1,500 bushels were sold by him at the orchard. These averaged something over a dollar a bushel, running, I believe, from $1.25 to $2.00 per bushel, depending on the varieties. Mr. Marsh stated that he could have sold at least a thousand bushels more at the orchard if he had had them. Some of the varieties that seemed to do the best in this orchard were McMahon—which is spoken of very highly all through Wisconsin—Patten, Dudley and Windsor. This orchard has done a great deal toward encouraging apple growing in that section of Wisconsin, and it was stated that a large number of orchards had been put in the last year or two, simply as a result of watching developments at Warsaw.

James Melville, of Chippewa Falls, reported having 5,800 apple trees, in most cases in bearing. Four thousand five hundred of them were Wealthy, about 200 Northwestern Greening, and the others were scattered, a few of each variety for his own pleasure. These trees were planted rather too close, thirty feet by twelve feet. He sold practically all of his apples at a dollar per bushel. What few Duchess

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he had, however, were from seventy-five cents to a dollar. He had four acres of eleven-year old Wealthy, which yielded him one thousand bushels. His orchard is free from disease of any sort, thrifty and is very promising. This orchard has also stimulated apple growing along the ridge, and many other orchards have been established.

The Wednesday afternoon session was spent in discussing tillage as compared with mulch for apple orchards, and the discussion seemed to indicate that it was desirable to cultivate in most cases, except a few places that were apt to wash, where the grass was necessary to hold the sod. A number of men who had in past years advocated mulching had changed their ideas, and the opinion seemed to be very

general that cultivation was the best method, with occasional seeding to clover or some crop to add humus to the land.

Wednesday evening the program was in charge of the Horticultural Department of the College of Agriculture, and a number of good papers were given by the young men of the college.

Tuesday a fruit judging contest was carried on by students of the college for prizes amounting to twenty-five dollars. The first prize of ten dollars was awarded to the only young lady of the class. This contest stirred up a good deal of enthusiasm among the students in horticulture at the college and was a good thing.

Thursday forenoon the Northwestern Greening was discussed. It seemed to have a good many friends in Wisconsin, but only a few of them would favor it as a home apple. Most of them said that it was a good apple to raise for market, on account of its size and uniformity,

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but that it was objectionable because it was late coming into bearing, subject to disease and insects, and buyers seldom cared to buy the same variety again because it lacked dessert qualities. It seemed to be losing favor with the bulk of the growers, although it was named by some as one of the five best apples for the commercial or home orchard in Wisconsin.

Lime and sulphur as a summer spray was discussed by Everett Wallace, of Cornell University, and a Sherwin-Williams representative discussed the use of arsenate of lead.

The Thursday afternoon session was given up to market gardeners living near Oshkosh, which is the garden district of Wisconsin. White Plume and Golden Self-Blanching celery were the varieties recommended for planting. Wm. Nelson, in discussing muskmelon growing, said that he grew about six acres, four acres of Emeral Gem and an acre each of Honey Dew and Osage. He planned to have his muskmelons follow radishes. He usually obtained about $150 an acre for his radishes, and his melons gave him a return of about $200 per acre. The Emerald Gems were packed in baskets, eight melons to the basket, and sold at about fifty cents per basket. Osage and Honey Dew were sold by the dozen.

M. A. Rasmussen, a tomato grower, said he could grow tomatoes for fifty cents a bushel and make good profit. He used a strain of seed developed at Oshkosh. Tomatoes started in the hotbed March 10th, transplanted later to cold frames, and then to the field, ought to be ready to pick July 15th. He sorted these into three grades and early in the season packed them in market baskets. Later in the season, when they are more plentiful, he sorted and graded and put on the market in bushel baskets. They yield at the rate of about 720 bushels per acre, and usually gave returns of between $400 and $450 per acre.

Thursday evening the annual banquet of the society was given in one of the hotels. This was attended by about one hundred people and was a very enjoyable affair.

The meetings were all well attended. Good fellowship seemed prevalent, and a great deal of interest was manifested in fruit growing, especially apple growing. An effort was made to prove that apples could be grown to just as good advantage in Wisconsin as in a great many of the sections of the west that have been advertised so widely. It was not claimed that winter apples could be raised at all successfully, but it was shown that varieties such as Wealthy and McMahon could be grown to just as good advantage, and probably as good returns obtained from them, as in any of the fruit growing districts of the west. A great deal of stress was put on the matter of

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growing apples in Wisconsin, and every effort made to discourage people from emigrating to the districts that are being so widely advertised in western sections.

Altogether, this was a very interesting session, and one of much value to the fruit interests of Wisconsin, and it showed the growers there to be a progressive, enthusiastic and deserving lot of men.

Notes from the Wisconsin Meeting.

A. J. PHILIPS, WEST SALEM, WIS.

A few notes of the recent Wisconsin meeting. The meeting was one of the best held for years, the leading and prominent feature to the writer being the exhibit made from the Warsaw trial orchard, the first of the kind planted in Wisconsin some thirteen years ago. It was interesting to Mr. L. G. Kellogg and the writer for the reason that after traveling in different counties for about a week we selected and located this orchard. We aimed to secure a central location easy of access to the traveling public, far enough from lakes, rivers or other water influence and on the northern cut-over timber lands, which abound in the state. A committee of the state society selected the varieties excepting the Avista, Eureka, Dominion, Dudley, Peerless and Malinda, which I selected myself, as I had tried them thoroughly in my own orchard, four of them being good winter sorts.

The McMahon White apple in the Wausau (Wis.) experiment orchard. Two valuable Wisconsin products.

It is most gratifying to Mr. Kellogg, our treasurer, and myself that the location is No. one, as the exhibit showed, and it is gratifying to the writer to know that the six varieties he selected and fur-

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nished—all but Peerless—are pronounced by Mr. W. H. Marsh, who handled the fruit this year, as beyond successful competition by any other varieties, and all six in size and endurance were the best I ever saw of the same varieties. Others, like Patten, Northwestern, Wolf River, Okabena, Wealthy, Longfield, McMahon, Utters Red, two of the Thompson seedlings, Hibernal and Duchess, were well loaded and fine in appearance.

Now when I remember that during the time I superintended the planting and did quite a little of the filling-in and most of the washing of the roots myself, that more than twenty men left their teams on the highway and came to where we were working and said:

"The state is fooling away money and time; you will never get a wagon load of fruit on the whole six and one-half acres you are planting."

I said, "Time will tell."

I say as I remember the opposition we met—and some of these knowing ones had silver locks—that it is most gratifying to know that Mr. Marsh picked and sold over twenty-two hundred bushels of apples from the orchard the past season, free from worms and pests, which sold for over one dollar per bushel. He brags on Dudley, Peerless, Avista, Eureka, Wealthy and McMahon—is most jubilant over Dudley and Peerless, both as to quality and size, while for sweet his Eurekas can't be beat. I have ordered about a dozen kinds, if he has them left, to be sent to Mr. Latham's office, so Elliot, Green and others may see them.

Looking at those apples and their keeping qualities, I am fully satisfied that though Prof. Green and Mr. Wedge honestly reported that they found those varieties blighting I should for the benefit of settlers living on the cut-over lands of Wisconsin and Minnesota have kept right on propagating them, for now I have had twenty calls for trees of those two varieties this winter. I am sorry to say there are none in sight. It takes a lifetime to find out some things.

Cucumbers in Dry Weather. - I had excellent results last year, which was quite drouthy, in growing cucumbers. Tin cans were punctured on the sides and bottom with a nail, then filled with coarse manure and sunk two-thirds their depth in the center of each hill before the seeds were sown. When the plants were well up the cans were filled daily during dry weather with soft water. The vines bore profusely the entire season, while neighbors' vines were either dying or dead from heat and drouth. Tomato plants so treated will thrive and bear fruit much earlier, also of larger size, than plants not treated.—Anon.

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South Dakota State Horticultural Society, Annual Meeting, 1910.

S. H. DRUM, WASECA, DELEGATE.

Your delegate, owing to the delay in making connections on account of snow blockades, arrived at Yankton late Tuesday afternoon. There he met with a most cordial reception from the members of the Horticultural Society. Immediately after presenting my credentials I was made an honorary member of the South Dakota Society.

I missed the first sessions but was in time to hear Col. Gurney's paper on the "Propagation of Raspberries." Among the other things he told how these berries may be propagated from small pieces of roots. An interesting discussion on "Strawberry Culture" was led by Mr. E. D. Cowles, of Vermillion, S. D. Geo. H. Whitney, of Yankton, gave a practical demonstration which led to a discussion that made the subject much clearer.

At the evening session Prof. N. E. Hansen gave his illustrated lecture on his trip to Russia, and Prof. Severin, of Brookings, State Entomologist, gave one on nature study.

On Wednesday there were very good papers on "Tree Planting for Comfort and Profit" and "The Best Trees for the Planter." Horticultural entomology was presented by Prof. Severin in a very plain and forceful manner.

"Minnesota Horticulture" was the topic assigned your delegate, and he tried not to misrepresent our society. Mr. Whitney gave an extremely interesting account of his trip to Manitoba last summer.

"The Best Fruit for Commercial Purposes in the Black Hills" was treated of in a paper by Chris. Thompson, of Rapid City, S. D. He said that Yellow Transparent, Duchess, Red Astrakan and Whitney No. 20 are the most profitable with him and sold for from six cents to eight cents per pound. These are the early sorts. The winter apples are Ben Davis, N. W. Greening and Janet. The latter keeps until new apples are on the market. But of all the apples the Wealthy is the best money maker.

"The Farmer's Orchard" was treated in a very pleasant and interesting way by Mr. N. H. Dybvig, a young man from Colton. A paper on "Plum Culture" was presented by Mr. De Wolf, of Letcher. Prof. Hansen told us of the progress he was making in breeding hardy fruits.

On Wednesday evening a number of good papers were presented and some lively discussions were had. The discussion on "Civic Improvement" was led by Prof. Geo. A. Clark, of Yankton, the president of the society, which resulted in a very general mixup. One of the

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speakers slammed Minnesota in a way that was resented by your delegate, who instanced what the "Woman's Auxiliary" are doing at Lake City and other points in our state in the way of civic improvement.

The apples recommended for the permanent list are Duchess, Iowa Beauty, Wealthy, Milwaukee, Anisim, Patten's Greening, Hibernal, Dudley. McIntosh Red, a seedling of Fameuse but better color and keeper, is recommended for Black Hills.

Apples of first degree of hardiness: Hibernal, Duchess, N. W. Greening, Wealthy, Anisim and Iowa Beauty.

The state of South Dakota is divided into three districts, north, middle and south, and some of these varieties were hardy in one district and not in another, as their climate is diversified. The Milwaukee (formerly known as North Star) and the Dudley, both seedlings of the Duchess, were highly spoken of by Prof. Hansen as fine apples with small cores, good keepers of fine quality and perfect hardiness. Longfield and Lowland Raspberry were recommended for trial.

The plum list is Wolf, Wyant, Forest Garden and Hawkeye; also plum hybrids and *Hanska* for trial.

Pears and all southern fruits were put on the "black list."

Raspberries: Loudon, Turner, King, Kansas and Cumberland were recommended for trial *if covered*, and the Sunbeam if uncovered.

Currant: Victoria.

Gooseberries: Carrie, Houghton, and Pearl for trial.

Strawberries: Farmer's berry, Sen. Dunlap. *Commercial*: Warfield and Bederwood.

Grapes with protection: Concord, Worden and Niagara; without protection, Beta.

The whole audience participated in the selection of the fruit list in this meeting, which gave general satisfaction but was somewhat confusing to a reporter.

The attendance was about fifty and represented all the older portions of the state. There were also members from the Black Hills.

I want to express my appreciation of the kind reception and many courtesies extended to me as delegate from Minnesota to the South Dakota Horticultural Society. I found them a whole-hearted and earnest set of men. They are mostly young men, and there are apparently only one or two of sixty years of age and some mere boys.

OFFICERS FOR 1910.

President—A. W. Kruger, Groton.
Vice-President—A. L. Van Osdel.
Secretary—Prof. N. E. Hansen, Brookings.
Treasurer—M. J. De Wolf, Letcher.
County Directors: One of each county—appointed but not announced.

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Apples for the Minnesota Commercial Orchard.

WM. A. BUGGS, WINONA.

I still have unbounded faith in the proposition that apples can be grown in commercial quantities in Minnesota at a financial profit. The numerous small orchards yielding so abundantly of fruit, in appearance and quality equal to that of the east and the west, and with a market within the bounds of our own state as well as in the northwest generally—all points to what may be done when varieties for orchard planting are intelligently selected and scientifically cared for,

A windrow of Wealthy apples—the best of Minnesota's commercial varieties.

and the fruit sold in a business-like manner—properly sorted, packed in a neat box and sold in the right place.

In all trees to be planted in our state, hardiness is the first essential. Now, we have many trees that seem perfectly hardy, yet we cannot recommend their planting because of a lack of other requirements. Second, I would place productiveness, for to make orcharding pay each tree must bear a reasonable amount of fruit quite regularly. Third, quality, and if for eating out of hand size of fruit and color have much to do with sales. If for cooking purposes and to be disposed of by the whole package, then size and color do not make

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so much difference. We are describing the ideal tree and fruit, but such cannot yet be bought in our nurseries. However, some of our well known varieties possess many of these characteristics, and the best we can do is to choose from them. Judging from what was to be seen on the Winona market this fall the Wolf River and Utter were the leading varieties locally. A considerable quantity of this fruit was marketed here, and it was of excellent appearance and good quality, yet neither of these trees are desirable.

There is an unlimited demand for the Wealthy, and the trees bear heavily and regularly. I would place it first in the list of fall varieties. The best money maker in alternate years is the Duchess of Oldenburg. Aside from its keeping qualities, it is the best paying variety today if picked at the right time and well sold.

It may seem strange to some, but I believe positively that the Malinda in our county has borne more good apples than any other variety during the last twenty years, according to the number of trees. This excellent late keeping variety (even though tardy in bearing) is not receiving the consideration it deserves.

The Florence crab bears early, heavily and regularly. Its fruit sells regularly for top market price, and the tree is hardy and healthy. It deserves more attention. The Whitney No. 20 is making money for its grower. If sunscald could be prevented, I would give it a prominent place.

Permit me to call attention to the fact that Patten's Greening is not commonly planted, and that in many cases Northwesten Greening is substituted for it. Patten's, what few are grown, do well.

Western Horticultural Methods Applied to Minnesota.

PROF. C. B. WALDRON, HORTICULTURIST, AGRI. COLLEGE, N. D.

Fellow Members: It was my privilege during last summer to spend a considerable time in the fruit growing regions of Oregon and Washington. I had been out through that country before on hurried trips, but never had the opportunity of stopping off and examining the orchards and looking up the growers themselves. This time I went right out to the orchards and was there ten days, and I received at first hand my information of western methods of horticulture. Prof. Bailey, in one of his books, tells us that the average fruit grower does not produce his crop; he discovers it. He has some trees growing on his farm, and at a certain time of the year he goes out and discovers a crop of apples. That is the difference between the Western and the Eastern fruit grower. The Western fruit grower produces his crop, he does not discover it. He knows every

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step necessary to take to produce a successful crop, and his energy is bent toward the production of that crop. I might consume considerably more than the time allotted me to present this subject, and in order to confine myself within the limit, I have jotted down a few notes, which I will read to you.

The conditions essential to the highest success in fruit growing are not so easily named as one might at first imagine. We can all name the general conditions, such as abundant sunshine, right temperatures, fertile soil and unfailing moisture, but each locality is sure to develop its own special peculiarities and problems, and only an actual trial will determine what the nature of these is to be. The Hood River strawberries, as a class, are so different from all other strawberries that the casual observer can distinguish them from other strawberries about as easily as he can distinguish strawberries from potatoes, and yet, knowing the soil and climate, what horticultural skill would enable one to tell in advance just what kind of strawberries would be produced under such conditions?

Certain districts in New York are devoted almost exclusively to grapes, others to apples, peaches or raspberries. With all of our knowledge of what each of these crops requires, still we are able to make a fruit map of the state only after long years of trial.

I asked the experiment station corps of a western state if a certain district that all of them had visited would be suitable for apple growing. Their reply could be simmered down to this:

"We don't know; it hasn't been tried."

This may or may not be an evidence of the backward state of horticultural science. It is at least a confession that the unknown quantity in our horticultural problems is still great enough to confound our carefulest calculations.

There is, however, one element of success that must be forever present, whether the grower be blessed with volcanic ash, sunshine, unfailing moisture or what you will, and that is the human element. To grow apples one must talk apples, read apples, dream apples. He must have apple faith, hope and love. He must apply himself to his task with seriousness and sincerity. The same condition applies to all fruit crops. Continued success results only from persistent and intelligent effort. Herein lies the secret of much of the success of western orchardists.

Giving full credit to the excellent and wonderful climate of certain apple growing districts, still the fact remains that no region is so favored as to make care and skill indispensable. That this care and skill receives greater reward in certain parts of the west than in many

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other regions is no doubt true, yet, on the other hand, neglected orchards at North Yakima or Hood River look exactly like neglected orchards in New York, Michigan or Minnesota and are even less profitable.

The average western grower does not expect to escape drawbacks and discouragements, but his enterprise, pluck and abounding faith will not permit him to be defeated. He has entered seriously into the industry of manufacturing apples of a fixed grade and standard, and every process is watched and regulated as in all successful manufacturing plants. The lack of market standards among eastern growers has been an inherent source of weakness in the fruit industry. To raise anything in the way of fruit that an indulgent and unassisted nature may finally decide upon, and then to thrust the product upon a buying public that has not been enlightened or even notified as to what they may expect, is a practice dignified by age rather than wisdom.

Ninety-five per cent of all apples grown at Hood River are marketed through the apple growers' association. This means that all apples must come up to a fixed and uniform standard. This association, through its agents, knows where and how to sell. They can command the market to the extent that a single grower could never hope to do. With low prices in this country, they seek the foreign markets. In the past season one solid trainload of apples was purchased in a certain district to be shipped to London, and the buying took place while the trees were yet in blossom. The apples were fine, of course, but not better than many that adorn your own tables at this meeting.

There was no question in the mind of the buyer as to whether the fruit would be of a standard excellence or not, neither did he seem concerned as to whether an oversupply in certain regions might make the prices of apples considerably less than the price that he was paying. He was operating with the assurance born of experience that certain markets are willing to pay a certain price for fruit of a known quality, though all the rest of the world might be buried in apples.

It is undoubtedly true that some of the western districts have distinct advantages that the Minnesota grower may not hope to compete with, and on the other hand most of the western fruit is inferior to our own in flavor and keeping qualities, and at the same time we are nearer to the world's markets. "The home of the big red apple" has an alluring sound, and our Wenatchee friends make the most of it, and yet he who knows apples, inside as well as out, would be tempted by the quality rather than the appearance. Minnesota has the sunshine and the high latitude that gives an apple of superior quality. We

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know this, but the average consumer does not. He should be educated.

The largest profit per acre in any of the western regions that I have visited is obtained from crab apples. As they are not troubled with the blight, the Transcendent is the variety chiefly grown.

When it comes to the subject of crab apples Minnesota can stand up and be counted with the big boys at the head of the class. You have in the past, through the selection of wrong varieties, suffered severely from the blight, but you know better now. I never saw larger nor finer crops of crab apples than I traveled past last September on a trip from Minneapolis to Ortonville. Any region west of the great divide that grows such fruit heralds the fact abroad to the ends of the earth, and the land on which it is grown sells for from $500 to $2,500 per acre. A little of the western system and enterprise applied to the most favored spots in Minnesota would without question bring as big returns as in any part of the west.

To summarize: The lessons that we can learn from our western cousins are these:

First: Determine what fruits are commercially profitable in any given district.

Second: Push the growing of these to the utmost. Make it a serious business rather than a haphazard venture. Adopt all up-to-date methods.

Third: Put up the fruit in the most attractive manner possible and sell standard grades under a trademark that purchasers will learn to rely upon.

Fourth: Advertise your fruit as something superior to anything that can be grown anywhere else in the world. Post the public on the particular points of excellence for which your fruit is noted.

Fifth: Through a fruit growers' association post yourselves upon apple markets and develop a market of your own that can be relied upon each year.

Sixth: Don't sell any good fruit land for less than $500 per acre. Make your land increase in value at the rate of $100 per acre each year by planting it to crab apples.

Mr. Geo. J. Kellogg (Wis.): Mr. President, I am so chuck full of that western braggadocia, I made up my mind, when I got to Spokane and heard all I did, the farther west I went the more earnestly I believed in that Bible statement, that "all men are liars." (Laughter.) I believe that it applies especially to men selling lands. I have seen that same condition of orchards in Oregon that the speaker describes, but most of the owners are moss-grown instead of the trees. I would not very earnestly recommend the practice of lying that prevails in that section of the country, but those western growers beat our men here in the growing of commercial varieties and in the matter of spraying. They have got spraying down to a science. I did not see a half dozen wormy apples in handling four thousand plates at Spokane. There they consider spraying of the greatest importance. Then they pay a great deal of attention to the matter of thinning, and that is a

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subject to which I have not heard reference made here. They throw out everything that does not come up to a certain standard, and they pack only perfect apples and those of a uniform size.

When you have got size, perfection and high color, then the packing is of the next greatest importance. In our examination of plates, we found on one very nice plate of Rome Beauty four stems that had been pulled out, sharpened, and then stuck back again in the apple. Prof. Van Deman said he had never found such a trick practiced in all his travels. The packing is an important feature, but if the stem of the apple is not where it belongs, that apple is spoiled. We had so many plates of apples that seemed of equal perfection, that when we got down to a close examination of the different plates, we rejected everything that had even a fly speck on it; we had to. You will understand that getting two good plates entitled to premiums out of fifty-eight almost perfect plates, it was absolutely necessary to reject everything that showed the slightest imperfection, and if we could not do it any other way, we squeezed the apple a little. It was really astonishing the perfect apples that were exhibited there,—in all, thirty carloads. It was a wonderfully grand sight to see. I did not have time to go around and see the entire show; I was too busy judging apples to see anything else. I was not in the orchard this time, but I spent some time there four years ago. Mr. Hanchett spoke yesterday of the orchards he visited out there, and, as he told you, they are neglected about as badly as the orchards are here.

The Fruit Show at Council Bluffs.

A. R. KOHLER, ASSISTANT HORTICULTURIST, ST. ANTHONY PARK.

The 1909 fruit show and meeting of the National Horticultural Congress was held at Council Bluffs, Iowa, during the week of Nov. 15th to 20th. The show was a large improvement over that of last year. The exhibits were all up by the second day, with the exception of the Maryland exhibit, which was unfortunately delayed until the middle of the week by a mistake in shipping. Iowa had the most extensive showing, but much of the fruit was far below anything that should be permitted on the tables of such a show, being wormy, scabby, spotted with sooty-blotch or otherwise defective. Exhibits from other states were also bad. The showing from Hamburg, Fremont Co.; Mondamin, Harrison Co.; and Williamsburg, Iowa Co., were clean and creditable, and demonstrated the fact that good fruit can be grown in Iowa, and that the showing of blemished stuff is unnecessary if the growers give the necessary attention to spraying and other care. The showing by C. E. Mincer, of Hamburg, was especially attractive. The fruit was clean, well grown, well selected and attractive-

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ly presented. A specially attractive feature was his showing of boxed stuff. It was close in attractiveness and merit to western boxed fruit, and demonstrated beyond a doubt that boxed stuff can be grown in southwestern Iowa, in the Missouri Valley, and suggests the fact that if fruit growers of the Mississippi Valley would give their orchards the care and management that western growers do, and apply the same principles of packing and marketing, the Mississippi Valley could become a serious competitor of western apples. Nebraska was the only other central state which attempted a showing.

Among states from the east which made a showing may be mentioned Maryland and North Carolina, and in a small way, Virginia, Maine and Pennsylvania; from the west, Idaho, Colorado and New Mexico; and a few states from the south.

A. R. Kohler, Asst. Horticulturist, Minn. University Farm School.

The principal showing was of apples. A minor showing was made of citrus fruits, nuts, and also a few pears, peaches, plums, grapes and persimmons. The showing of fruit products, consisting of jellies and other preserved goods, was fairly extensive and good. The showing of vegetables was small, and not up to that which may often be seen at a county fair in extent or average merit. A small flower showing was also made, including a few pretty booths.

The box packing demonstrations did not attract much attention. They could be improved upon by putting some one in charge who not only can demonstrate box packing but who understands the different kinds of packs thoroughly and the ideal way in which a box should be packed, and who can lecture on the subject as well. The idea of having such demonstrations out among the exhibits is a mistaken one, and contributes much toward lessening their value. They should be held at a stated hour once or twice each day in a room or building where the people may assemble for that purpose only, and

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where they will not be distracted by exhibits, passing onlookers, who usually forget to stop talking, or concessioners, crying their wares at the tops of their voices.

The spraying demonstrations were fortunate in being somewhat more isolated in one end of an annex among the exhibits of spraying machinery. They generally attracted a good group of interested listeners. The conditions were unfavorable in that the weather had turned cold, with snow on the ground, making the outdoor part of the demonstration that had been planned disagreeable. The talks, aided by charts, showing the life history of some of the principal insects and figures bearing on the work, were the most valuable part of the spraying demonstrations. Water was used with a barrel outfit and several smaller outfits in demonstrating the spray. It seems that the use of Bordeaux mixture or some other compound instead of water would have been advisable. The value of the demonstrations could have been increased by demonstrating the preparation of several of the more important spraying mixtures. If these demonstrations could be isolated from surrounding attractions and the necessary facilities supplied for carrying them on as would be desired, they could be very materially increased in value.

Domestic science demonstrations were also given, but the facilities provided and the surroundings were such that anything but success was inevitable.

Not only was the showing of fruit much better than last year, but the management of the show was also much improved. It will, however, be necessary to make many more changes in the way in which the show is handled before it can claim much honor as a high-class fruit show. Judging from what one can see, it would seem that the fruit show was, to a considerable extent, a place where land companies may congregate for the purpose of having a booth in which they may exhibit the products of the particular section of country in which they are selling land, with just enough other exhibits from sections where the growers are not particularly interested in selling land, sprinkled among their own, to give it the flavor of being primarily a fruit show and attract attention from over the whole country on that basis. If such is the case, then it will be useless to hope for any change in the way in which the fruit is shown, because as an advertising proposition it is to the interest of every land-man who has a fruit exhibit to have every plate or box of fruit which he has at the show together in his allotted space, so as to make the best showing possible and attract the most possible attention to his particular section.

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If, however, the show is for the purpose of showing the fruit rather than the land, then the practice of permitting exhibitors to group their stuff together is utterly weak on the part of the management and abominable from the standpoint of showing the fruit. The desire of a man to have all of his stuff together is natural and is often permitted at county fairs, where the management is inexperienced and does not know any beter; but in a large show which pretends to be national in scope, there is no excuse for such a practice. Any one with the slightest insight or ability of observation can readily perceive how infinitely more instructive a fruit show would be if all the exhibits were grouped in classes. If an individual display is desired for advertising purposes, a separate space should be allotted for that purpose. Furthermore, this space could be sold out at advertising rates, and the exhibits stand for what they are, land advertisements.

For sectional, state or county exhibits, a separate space should be provided, and these could largely be grouped in classes the same as plates or boxes. Furthermore, it is important that each individual class should be plainly and fully labeled, so that any one passing by could readily comprehend the nature of the competition in each class. Such a plan would increase the educational value of the show immensely. No one knows the need of having all entries in each individual class grouped together better than do the judges of the fruit.

In the judging at Council Bluffs, the plate exhibits were judged at a stand to which all of the plates of the respective varieties were carried from all parts of the show as they were called for. The judges had to hunt up the entries for all other classes and compare them as best they could. It often took longer to find the entries than it took to judge them, and the possibility of error in judgment because of the separation of exhibits was greatly increased wherever the competition was close, to say nothing of the handicap and annoyance under which the judges did their work. When it came to the judging of individual plates, the confusion was at its worst. Some of the exhibitors were not there to bring up their plates when the varieties were called for, and boys were sent out to hunt them up. Often they could not find them, and twice a variety was called back after it had once been judged, in order to satisfy some exhibitor who discovered that his plate had not been brought to the judges' stand with the other plates when the variety was first called. The judges are to be highly commended for their conscientious work and for their patience under all those trying circumstances. It is to be hoped

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that they have presented a report that will vigorously recommend the necessary improvements and that the management will live up to it in handling next year's show.

For the program the conditions were unfortunate. On the first day the attempts to speak were directed from the auditorium platform across the entire auditorium. There was so much noise from the many people walking about looking at the exhibits and talking together that only a few who crowded close up to the platform could hear, and the attempt was practically a failure. On the next day, a small group of interested growers gathered together on the platform and had a little session to themselves; later the meetings were held in the general utility room over the adjoining fire department, in an effort to segregate it from the noisy auditorium, but no attempt was made to provide extra chairs, and only about a dozen could sit down. Besides this, the meetings were held anywhere up to five hours after the time advertised. The result was that an average of hardly two dozen people heard the talks. These talks, or papers, as the case may have been, were on vital subjects and given by men of reputation and ability, and it was a pity that they should have been provided with such a poor reception.

Despite all of its shortcomings, the fruit show was of much value to many in driving home lessons which they would not otherwise have learned. Iowa apple growers who depended upon dust sprays decided that they were not the kind of sprays to use when they saw that the men who used liquid sprays were winning the prizes away from them. Many whose fruit was disqualified because of codling moth or other preventable injury learned that they must spray and spray well if they are going to raise first-class fruit. If an exhibitor cannot pick out a first-class plate of fruit without getting one or two wormy specimens in it, something is wrong, and he had better wake up to the situation.

Orchard Sites and Soils.—**In the upper Mississippi valley our fruit trees are often seriously injured by winter-killing. This winter-killing is due in a measure to the fact that the trees continue growing late in the autumn. The varieties, as for example, the Duchess, which stand our winters best, are those which make their wood growth in the fore part of the season and spend the last half of the open season, or the period extending from about the middle of July until heavy frosts, in ripening up their wood and getting ready for winter. Trees on the upland uniformly ripen up earlier in the season. Hence one important remedy for winter-killing is to plant on the thin upland soil where the growth is slower and the wood more firm in texture.**

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Development of the Apple in the Upper Mississippi Valley.

CHAS. G. PATTEN, CHARLES CITY, IA.

Fundamental to the development of fruits for this interior region is the production of stocks which can endure our extremely dry falls and comparatively snowless winters, often without snow for two or more weeks during intense cold. Prof. Hansen's thought along this line has been in the right direction, though by no means new to some other horticulturists. Like almost all of our horticulture here, it is experimental. Extremely dry winters are sure to come, and it is the part of wisdom to prepare for them, for it will avail us little in these extreme seasons that we have bred hardy trees bearing excellent fruit if the stocks upon which they are grafted are not alike, or nearly alike, hardy.

The little red and yellow Siberians, or Pyrus baccata, have been thoroughly tried in Maine and Iowa for the purpose of root-grafting, and they have proved a failure. They might do better, or even well, when stock-grafted at or near the ground, but that would not meet the wants of the nursery trade. Stock-grafting these seedlings should have thorough demonstration at your experiment station; they might prove to be a very great value in trying locations, particularly in the Missouri Valley area.

Nurserymen would greatly prefer to buy the hardiest stocks that can be grown or the seed which will produce them, and we now have the apples which will produce just such stocks as Minnesota, the Dakotas, western Wisconsin and northern Iowa demand. The Duchess and Pink Anis will nearly do it, while the Hibernal *will fill* the bill. I am aware that this is looking ahead, but I take it that that is the especial mission of this "Plant Breeders' Auxiliary" society. I am not informed whether the Hibernal has been tested as a cider or vinegar apple, but from tests that have been made it seems that its juice requires less sugar to jelly it than most other apples; in fact, it makes a syrup rather than a jelly.

The work of producing stocks for our future orchards is looking too far ahead to be a popular one; nevetheless, its importance and the time required to arouse the horticultural public to act justifies your progressive organization in bringing this matter to the attention of your people and urging your experiment station to demonstrate whether you have, or have not, the material from which apple stocks may be grown that will meet the climatic demands of the region re-

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ferred to. I have no doubt that the Duchess, Pink Anis and the Patten Greening uncontaminated with pollen of more tender sorts would answer this purpose. In this connection, it is pertinent to add that the Patten Greening has been proven to be the most valuable apple for the purpose of drying that has ever been tested and would undoubtedly prove a safe venture when planted exclusively for drying.

My interest in the horticulture of Minnesota is no wise less than if I were a resident of that state. You will therefore pardon me if I offer a thought, not as a criticism but as a suggestion, in reference to the planting of so large a quantity of seeds of the Malinda from one

Orchard row of young University apple trees, at H. L. F. Witte's, Hennepin Co., one of Mr. Patten's seedlings.

orchard. I am aware that in planting a multitude of seeds our chances of obtaining some things of value are much enhanced over planting in a small way, but our knowledge of the ancestry of the varieties with which we have to work is so very limited it appears to me to be the better way to plant seeds of a large number of varieties and combination of varieties and thereby secure the advantages of the unknown valuable combinations that must exist in our better fruits.

When we look back over the early reports of the Wisconsin society, and the condition of horticulture in all the Northwest, we should take pleasure in comparing it with what we have today; and yet we

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have just begun our work of advancement. The cross-breeding work here clearly demonstrates the fact that we can breed trees to our will, and it will soon be made plain that we can breed fruit to our tastes also.

I will not attempt this year to present more than this one phase of our work but shall earnestly hope that another year the cross-breeding work here will have so developed that it will add much greater interest to the subject of this paper. I will, however, add that we have produced here, at Charles City, three seedlings of the Oldenburg that passed the winters of '84 to '87 better than any tree of the latter variety on my grounds. All were transplanted trees, and each one of them I feel sure were cross-bred with a variety less hardy than the mother parent. They are what is known as Duchess Numbers Five and Eight and the Patten Greening.

Fruits for Minnesota Planting.

List adopted by the Minnesota State Horticultural Society, Dec. 9, 1909.

FOR THE GUIDANCE OF PLANTERS IN MINNESOTA.

Apples.

Of the first degree of hardiness: Duchess, Hibernal, Patten's Greening, Okabena.

Of the second degree of hardiness: Wealthy, Malinda, Anisim, Iowa Beauty, University.

Most profitable varieties for commercial planting in Minnesota: Wealthy, Duchess, Patten's Greening, Okabena, Anisim.

Varieties for trial: Salome, Eastman, Milwaukee, Newell's, Lowland Raspberry, Jewell's Winter, Evelyn, Windsor Chief, Superb.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent, Longfield, Northwestern Greening, Charlamoff, Tetofsky.

Crabs and Hybrids.

For general cultivation: Florence, Whitney, Early Strawberry, Minnesota, Sweet Russet, Transcendent.

Variety for trial: Faribault.

Plums.

For general cultivation: DeSoto, Surprise, Forest Garden, Wolf (freestone), Wyant, Stoddard.

Most promising for trial: New Ulm, Brittlewood, Compass Cherry, Terry.

Grapes.

First degree of hardiness: Beta, Janesville.

Second degree of hardiness: Moore's Early, Campbell's Early, Brighton, Delaware, Worden, Agawam, Concord, Moore's Diamond.

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Raspberries.

Red varieties: King, Turner, Miller, Loudon, Minnetonka Ironclad.

Black and purple varieties: Palmer, Nemaha, Gregg, Older, Columbian, Kansas, Cumberland.

Blackberries.

Ancient Briton, Snyder, Eldorado.

Currants.

White Grape, Victoria, Long Bunch Holland, Pomona, Red Cross, Perfection, London Market.

Gooseberries.

Houghton, Downing, Champion, Pearl, Carrie.

Strawberries.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Glen Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland, Marie.

Native Fruits.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry, High Bush Cranberry.

Capt. A. H. Reed: I presume I shall stir up a hornet's nest, but I want to ask why the Peerless is so ignored? I believe it is certainly worthy of being recommended for trial, and I move that the report be amended to the effect that the Peerless be recommended for trial, if not of the second degree of hardiness.

Mr. Andrews: It is not on "for trial", but it is on now for "valuable in some locations."

The President: That makes it all the better; that is better than if it were on the trial list.

Capt. Reed: I have become the past season a very strong admirer of the Peerless apple. It is nearly as good an eating apple as the Wealthy, but I admit it is a very shy bearer.

Mr. Elliot: I would like to ask Mr. Andrews what he knows in regard to the Eldorado blackberry. Why do you put that on the list? Can you cite anybody that has grown it?

Mr. Gust Johnson: I got some, but I don't think they were true to name, because they were too small from the description of them.

Judge L. R. Moyer: I would suggest to the committee that before the list is printed it be compared with the list prepared by the Department of Agriculture and made to correspond with the nomenclature of the official list. This association is getting too large and well known to have a nomenclature different from that of the Ameri-

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can Pomological Society, and we should lay aside our local names and make the nomenclature of our list agree with that of the American Pomological Society. Our records are read and known all over the United States, and I think we ought to call names according to the official list.

The President: Instead of referring to an apple—for instance, you would refer to it as the Oldenburg instead of calling it the Duchess. Is that what you mean?

Judge Moyer: It is.

The President: Do you think that would change the name in the market?

Judge Moyer: I do not, but if we would call it by the name in the official list it would correspond with the name by which it is known to pomologists.

Mr. Clarence Wedge: Capt. Reed and myself are generally in accord on most subjects, but in this instance we happen to be on the other side of the fence from each other in regard to the Peerless. I have with me a general summing up of replies to a question sent out by the secretary to the members of the society at the time they were asked to renew their membership, asking that they name varieties of apples such as they could recommend for their particular localities in the state. I have that list with me, and the favorable reports on the various varieties of apples were as follows:

Wealthy, 131; Duchess, 111; Patten Greening, 70; Okabena, 33; Hibernal, 31; N. W. Greening, 23; Peerless, 3.

You will note that out of all the replies received the Peerless received only three favorable votes. Now it seems to me if there are only three favorable localities in the state where the Peerless is doing well, it is hardly worth while to retain it on the list anywhere any longer, and I move that the report be so amended that it will drop the Peerless entirely from the list and that it be no longer recommended by the society.

Capt. Reed: Previous to this session I had been opposed to the Peerless, but from my experience this past season, seeing them grow and eating them, I have become very favorably impressed with the Peerless apple.

The President: Would not that apply to some other varieties? For instance, the Brett you know is a beautiful apple.

Capt. Reed: I move that this whole matter be laid on the table. I have the right to propagate any apple in the state that has shown up as well as the Peerless has.

The President: If we adopt Capt. Reed's motion to lay this matter on the table it will leave the report as it is, and will leave the Peerless on the list as "valuable in some locations." If you want the Peerless on the list you should vote no.

A vote was then taken, and the result being in doubt a division of the house was called for, which showed a majority of votes in the negative.

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The President: The question is now on the amendment offered by Mr. Wedge that the Peerless be stricken from the list. I hope it is clear to all of you what you are voting for.

A rising vote was then taken, resulting in ten in the negative and forty in the affirmative, and the Peerless apple was ordered stricken from the fruit list.

Pursuant to the motion offered by Mr. Andrews the fruit list was adopted as amended with one dissenting vote.

Is Top-Grafting Practical?

CHRIST BERTHELSON.

(Southern Minnesota Horticultural Society.)

It all depends upon having a good foundation to build upon. If we rely, as we do now, on seedling roots of doubtful hardiness, it is like building a house on a sand foundation. Water may not destroy our work, but the dry atmosphere of our northern climate would sooner or later destroy our work. The appearance of our older orchards will bear out the truth of this statement; as to how to get a good root system or foundation, opinions differ among horticultural specialists. Prof. N. E. Hansen, of Brookings, S. D., presents "pyrus baccata" as a sure remedy; Chas. G. Patten, of Charles City, Iowa, sends a warning against too much reliance on this practice; Mr. C. F. Gardner, of Osage, Iowa, is advertising in his catalogue a way of grafting which he calls "foster mother root-grafting." Instead of the root being spliced on the end of the scion it is inserted on the side which leaves the tree entirely on its own root. If we take Hibernal scions and wax both ends, top-work when two years from graft and cut the mother roots away, as stated before, when transplanted—which will be the third year—we have a tree as near hardy as we can get it.

We are able by top-grafting to raise many varieties of apples we otherwise could not produce on account of the varieties not being hardy enough in our climate. In regard to such trees it will cost more to raise them, but there will be a saving both in scions and roots, because there will be a vast difference in the amount of salable trees when dug, and the customer that buys them certainly can well afford to pay a higher price for such trees compared with the common nursery trees grown by the present methods. We also secure a better trunk by top-working or whip-grafting the Hibernal, that will not be near as liable to sun-scald as other varieties.

I do not expect we will all agree on this subject, but I am pleased that we have the opportunity to come together and exchange views. If we did not we would soon be nothing but root and branch, and a sorry lot of horticulturists. We would have no enthusiasm in our work and not be any help to one another, but merely drag out our existence without any happy moments to reflect on when blight, hail, drought, rabbits and our other enemies are taking the pleasure, profit and enthusiasm out of us.

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SECRETARY'S CORNER

AN ENCOURAGING APPLE YIELD.—E. W. Mayman reports a yield of 430 bushels of apples last season from his orchard at Sauk Rapids, some of the trees bearing as high as ten bushels. His orchard of 1,100 trees is reported as all doing well.

APPLES BY THE CARLOAD.—"We shipped between thirty and forty carloads of apples from this county (Fillmore) this year again, but the coming year is really the time for a big apple year. When all our young orchards get to bearing, we are going to give you a surprise in apple shipments.

C. E. SYNDER, Preston.

NEW FRUITS FROM PROF. HANSEN.—Another list of fruits originated at the South Dakota Experiment Station, in charge of Prof. Hansen, is at hand. We note some varieties in this list which had not appeared before. Copies of the list can be had by application to Prof. N. E. Hansen, Brookings, S. D. I understand these new varieties are offered for sale and can be secured by any one.

TO KEEP OFF RABBITS.—O. J. Hagen, of Hendrum, in the Red River Valley, who has had considerable experience with rabbits in his orchard, says "I use soapsuds spray for rabbits, and a very strong soapsuds wash also for mice, and rarely have I seen mice or rabbits touch trees that have been so treated. Before I commenced to use this mice would work up through the snow to the trees and rabbits on top of the snowdrifts."

A NEW LOCAL SOCIETY.—There has been a new local horticultural society organized at Madison, Minn., called the the "Lac Qui Parle County Horticultural Society." A list of seventeen charter members has been received from this new organization, of which Mike Bendel is president and J. F. Rosenwald secretary. The secretary in a communication says: "We expect to increase the membership of our society at once."

ANOTHER FRUIT GROWERS' ASSOCIATION.—Word has come to the office of the formation a year since of a fruit growers' association at Winona, which has already done much good to the fruit industry there. Such an association should certainly be formed in every locality where there are a number engaged in fruit growing, especially if they have to ship their fruit to a distance. It is practically the only way one gets fair results outside of the home market.

A CONSERVATION CONGRESS.—A representative gathering of those especially interested in the conservation of the natural resources of this state is to be held in the Auditorium, St. Paul, March 16-19, upon the call of the governor. Many of the strong men of the country are to be there and address the meeting from the platform. It will be a rare opportunity to learn about the great resources of our state, in regard to which matter so many of us are in a large measure not well informed. As far as we know now there will be no special representative of the horticultural interests of the state on the program, though such service has been tendered to those who are preparing it. We hope to meet many of our membership on that occasion.

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POPULAR FRUIT GROWING.—By Samuel B. Green, Professor of Horticulture and Forestry in the University of Minnesota. A thoroughly practical work treating on the factors of successful fruit growing orchard protection, insects injurious to fruits, diseases injurious to fruits, spraying apparatus, harvesting and marketing, principles of plant growth, propagation of fruit plants, pome fruits, stone fruits, grapes, small fruits, nuts, etc., etc. Profusely illustrated. 300 pages, 5x7 inches. Price, cloth $1.00 postpaid. For sale at this office, or given as a premium for two members.

REGULATING PACKAGES FOR APPLES.—The Minneapolis Produce Exchange, we understand, has unanimously endorsed a bill now before congress which provides a standard size of both barrels and boxes for apples, each barrel to hold exactly three bushels and each box exactly one bushel. That would seem to be ideal legislation, and that any one who is interested in the honest sale of apples would not be opposed to such a measure. It appears in congress under the name of the Lafean bill. Those who are interested in this measure should address their congressmen on this subject.

A VALUABLE SPRAYING BULLETIN.—A comprehensive bulletin on the general subject of "spraying," very fully illustrated, has been issued by the Colorado Agricultural Experiment Station. Any of our members who are desirous of securing this useful bulletin can do so without expense, we understand, by addressing the Director of the State Experiment Station, at Fort Collins, Colo., asking for Bulletin No. 71. This same bulletin somewhat enlarged and revised, is also published very nearly in full in the February issue of "Better Fruit," a monthly periodical published at Hood River, Oregon, where undoubtedly a copy can be secured upon application.

KEEPING CANADA APPLES FROM OUR MARKET.—The Uuited States exacts a duty of seventy-five cents a barrel for all Canadian apples from across the line into the United States. This may be very necessary protection for the valuable apple industries of the northwestern states, but to the writer it seems an absurdity. Probably they have a similar tariff to keep Minnesota fruit out of Canada. The time will come we believe when there will be train loads of apples grown in this state that ought to find a market in the great northwestern provinces. What more sensible thing than to remove this tariff and let our people trade back and forth on even terms?

DEATH OF S. M. OWEN.—The passing of this illustrious member of our society is of course well known to all of our members through the many and extended notices which have appeared thereof in the public press. Mr. Owen's death was not unexpected, as he had been failing gradually for a long time, the illness which apparently was the beginning of the end having been fastened on him after his last visit to Florida a year ago last fall. His death is a profound loss to the state at large, and comes especially near to those of us who knew him in a more personal way. His interest in the Horticultural Society dates back a generation almost, and in the work of this society and also in that of the Forestry Society he has always taken a large and an active part.

We hope to publish in an early number a suitable memorial of this gifted and much lamented fellow member.

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WEALTHY APPLE SEED FOR ALL.—The society is fortunate in securing an unexpected supply of fresh Wealthy apple seed through the kindness of Mr Clarence Wedge, of Albert Lea, and while this lot of seed lasts it is to be offered to our membership at one-half the price at which we have heretofore furnished it, namely fifty seeds for ten cents. There are hundreds in our society who are not yet growing apple seedlings in the contests offered by the society of $100 per annum for seven years, the first prize to be awarded in 1912. Who is there that cannot spare a small corner of the garden to participate in this interesting experiment? The trees growing from this choice seed are almost sure to be hardy and of some value, with always in sight the possibility of a winning prize. Should the fruit prove of little value, the trees can be used as stock for top-working in many cases. Send at once for one or more packages of this seed with full directions for the contest. When sending speak of this special offer.

NORWAY POPLAR HARDIER THAN CAROLINA POPLAR.—A recent communication from D. W. Buchanan, at St. Charles, Man., says: "We can give a test for hardiness here which you cannot give in Minnesota, and I find the Norway decidedly hardier than the Carolina. The latter usually freezes back here from six inches to a foot or more, and in an unfavorable season I have known young trees to go to the snow line. The Norway, however, is quite hardy, and I have never known it to be injured since I have had it under observation. I put out 1,000 trees each of these two cottonwoods, in parallel rows, a few years ago, and have had a good chance to observe them under exactly similar conditions. There is no doubt but the Norway is a hardier form of cottonwood than the Carolina, and the same remarks prove true in comparison with the common Dakota cottonwood, if brought from some distance south. The northern form of the common cottonwood, however, is hardy here.

DEATH OF OUR OLDEST MEMBER.—Mr. Ditus Day, long a life member of this society, for many years its treasurer, and one of the "veterans of horticulture," whose portrait will be found with the group published as frontispiece of the report of this society for 1898, died at the home of his son in Lake Benton on the evening of Monday, February 14th, at the advanced age of ninety-three years. His funeral took place at Farmington on the afternoon of February 16th, and his remains were laid to rest by the side of his wife, whose death preceded his by more than a score of years. Notwithstanding his advanced age, Mr. Day was with us year after year at the state fair until a year ago last fall. Late years he has spent the whole week at the fair, camping as any younger man might. His kindly face and thoughtful words endeared him to all who knew him. The passing of Mr. Day removes from our midst eight of the ten veterans of Minnesota horticulture whose faces appear in the illustration referred to, Mr. Wyman Elliot and Mr. Seth H. Kenny being the only ones still with us.

Mr. Day's name first appears in the membership roll in the year 1868, the same year that the writer first became connected with the society and the third year of its life.

A biography of Mr. Day will be found on page 423 of the 1895 report of this society, and an excellent portrait of him on page 349 of the same volume.

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FIRST HOEING AT THE HUMBOLDT SCHOOL GARDEN, IN ST. PAUL.

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THE MINNESOTA HORTICULTURIST

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School Gardens in St. Paul.

D. LANGE, PRINCIPAL HUMBOLDT HIGH SCHOOL, ST. PAUL.

It is now well recognized by educators that modern city life offers too little opportunity for boys and girls to observe things outdoors and to work with their hands. The schools are now striving to remedy this defect by manual training in the shop, by various kinds of industrial work, by nature study and garden work. This paper will deal exclusively with an experiment in school gardens made in the St. Paul public schools during the summers of 1908 and 1909.

In 1908 four gardens were started, and in 1909 the number was increased to nine. In 1908 the Sunbeam Band furnished the seeds for the gardens, the Ladies' Thursday Club hired a gardener for three months. He was a young high school graduate and was paid $30 a month. The Pioneer Press paid for plowing and harrowing the gardens, and the school board furnished the material and the work for fencing. We got things under way too late that year, the seeds not being planted before the first or second week in June, but results were fairly satisfactory, and we gained a great deal of valuable experience.

In 1909 the seeds were put in very soon after the soil was in proper condition. The funds were furnished by the Sunbeam Band, the Ladies' Thursday Club, the Garden Club of the St. Paul Institute, the St. Paul Commercial Club and by public subscriptions, which were received by the St. Paul Dispatch. During both seasons all the St. Paul papers gave the work their hearty support. All the contributing associations turned their funds over to the school board, and all bills were received and paid by the secretary of the board. The land consisted of vacant lots, which the owners permitted to be used without cost. Most of the gardens consisted of two lots, but some were a little larger and some a little smaller.

Supt. S. L. Heeter and Mr. Oliver Crosby, of the Garden Club, did most of the work of getting the various organizations to act to-

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gether. Miss Minna K. Bailey, of the St. Paul Dispatch, did the publicity work. The planning of the gardens, the arrangement of the beds, selection of seeds and other matters connected with the practical working of the scheme, fell to the writer.

We found it difficult to secure a competent man to supervise personally the planting at every garden. One man whom we had engaged at $60 a month left us when he was offered $80 by another town and with more favorable terms of work. Our experience has been that a good man who can handle children, as well as potatoes and turnips, is worth from $80 to $100 a month, and the writer does not believe that teachers should be imposed upon and asked to do this kind of work for nothing.

About two-thirds of each garden was laid out in plots varying in size from four by six to six by twelve feet. Each small plot was assigned to some individual pupil, with the provision that he could take home whatever he might raise. Each garden contained from eighteen to seventy-five individual plots, the number and size of the plots depending on the number of pupils and the amount of land available.

The plots in each garden were divided into several sets, and the arrangement of rows was the same for each set, so that the rows of each kind of vegetable extended across the whole width of the garden. The following may make the plan a little clearer:

Set No. 1.	Set No. 2.
Rows Nos. 1 and 2, Radishes.	Rows Nos. 1 and 2, Radishes.
Rows Nos. 3 and 4, Lettuce.	Rows Nos. 3 and 4, Lettuce.
Rows Nos. 5 and 6, Onions.	Rows Nos. 5 and 6, Carrots.
Rows Nos. 7 and 8, Turnips.	Rows Nos. 7 and 8, Parsnips.

Set No. 3.

Rows Nos. 1 and 2, Radishes.
Rows Nos. 3 and 4, Lettuce.
Rows Nos. 5 and 6, Beans.
Rows Nos. 7 and 8, Peas.

We followed this plan to simplify the work of planting and the handling of the children and also to secure a better appearance of the garden as a whole. We found that both boys and girls would rather raise vegetables than flowers and therefore planted only vegetables in the individual beds. All the work, except the plowing, was done by the children in charge of a teacher or gardener. After the plants had come up the children went to the garden two or three times a week in charge of a gardener or teacher. Some of the older pupils also worked at other times, whenever their plot was in need of attention.

The following vegetables were used for the individual plots:

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radishes, lettuce, seed onions, set onions, carrots, beets, parsnips, spinach, beans, tomatoes. Every child planted lettuce and radishes in order to secure some early crops.

Outside of the individual plots about one-third of the area of each garden was used for general beds and for flowers. The beds or rows of these were arranged to suit the needs of the plants and in accordance with local conditions.

The following vegetables and flowers were used for the general beds: egg plant, peppers, cauliflowers, kohl rabi, corn, potatoes, squash, cucumbers, pumpkins, gourds. Flowers: asters, balsams, zinnias, stocks, marigolds, phlox, dahlias, cannas, gladioli, candytuft.

Through the kindness of Profs. S. B. Green and LeRoy Cady, of the Horticultural Department of the State Farm, we were enabled to start the following plants in the greenhouse and thus secure a much better growth during the summer: lettuce, tomatoes, cabbage, cauliflower, egg plant, peppers, asters, balsams, zinnias, stocks, marigolds.

In regard to tools our experience showed that they must be furnished and kept by the school. The following sets were provided for each school having a garden: twenty-four hoes, twenty-five steel rakes, two four-tined spading forks, two spades, three square pointed shovels, four eight-quart galvanized sprinkling cans, 250 feet of hemp cord, two garden trowels, fifteen stakes 1 x 1 x 18 inches.

The results this year were very satisfactory. The gardens were looked after as follows: Four were in charge of a paid gardener, two each in charge of a competent school janitor, who received extra pay, and one in charge of a volunteer teacher. I may add here that a St. Paul seed house furnished the seeds at cost, and two St. Paul hardware firms furnished the tools at cost.

From our two seasons' experience I would make the following deductions:

1. The work must be planned very early, or inevitable delays will retard the planting beyond the best time. In a large city it takes time to select the lots, get the owner's consent, haul manure on the land, etc.
2. It does not pay to experiment with soil that is unfit.
3. The work must be in charge of a competent person and twenty-four pupils make a good sized class.
4. It does not pay to hire a cheap man.
5. Gardens must be fenced to keep out cows and chickens.
6. Seeds and tools must be furnished, or the work will be bungled.
7. Water must be provided for a dry spell.

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8. After August 1st the children should be given a vacation, and a man should be hired to look after the garden and harvest the crops as they mature.

We did not try to touch the educational or classroom possibilities of this work. Our means and time did not allow it, and the men in charge were not prepared to direct anything else but the practical field work. The writer is, however, of the opinion that the educational possibilities of school gardens are very great.

Mrs. Underwood: How old are the children who have these gardens?

Miss Mann (who read Prof. Lange's paper): I can speak of only one garden and that is near the Humboldt school, of which Mr. Lange is principal. The ages of the children vary from eight to fourteen years; they take in children from the third up to the eighth grade. In the Humboldt school garden most of the plots were in charge of two pupils. They preferred to work in that way.

Mrs. Underwood: Were all of the pupils in school required to work in these gardens?

Miss Mann: No, it was volunteer work.

Owatonna Trial Station, Annual Report for 1909.

THOS. E. CASHMAN, SUPT.

Supplementing the report made on June 14th, 1909, I beg leave to state that the large crop promised at that time at the Owatonna Experiment Station did not turn out as well as expected. About the time that the midsummer report was made, the fruit began dropping and did not cease until at least half of it was gone. I attribute this to the fact that a large orchard owned by a neighbor just over the fence had not been sprayed, and being infested with the various pests prevalent in this country it caught us napping for a time. This year we sprayed our trees just before the buds began to open but did not reach them again until we noticed the fruit dropping. I believe that the enemy from our neighbor's orchard stole a march on us. Had we sprayed with the proper ingredients when the fruit was setting, I believe we could have saved a large part of what dropped off, consequently I am satisfied that in order to save the majority of fruit set each year and bring it through in a strong, healthy condition (barring unlooked-for storms) it is absolutely necessary to spray three times during each season: first, before the buds begin to swell; second, when the fruit is beginning to form; third, when the fruit has attained the size of large marbles, and again when the fruit is half grown, if possible. For the first spraying, I would use six pounds of blue vitriol,

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two pounds of paris green, four pounds of fresh slaked lime, all dissolved in fifty gallons of water. For each of the three succeeding sprayings, I would use but one pound of paris green, four pounds of blue vitriol, four pounds of fresh slaked lime, dissolved in fifty gallons of water. If this solution is properly applied and at the times stated, some of the greatest difficulties now experienced by fruit growers will be eliminated.

Owing to the fact that the land at the Owatonna Experiment Station is fully occupied and no lands available for further propagation, very little more can be accomplished except by top-working and cross-fertilization until the seedlings that have not come into bearing begin to produce fruit. We expect the best results from the new lot, as they were planted from Wealthy seed. The facts are that there are but a few varieties that have come into bearing at the Owatonna station that excel our known leading kinds except in hardiness. Father Dartt surely started right to obtain that end, and I believe that in order to obtain quality of fruit from this foundation the best policy to pursue is to top-work the hardy varieties that bear highly colored apples with such varieties as Grimes' Golden, Jonathan and Brilliant, allowing part of the bearing branches to remain on the tree in order to fertilize the high quality of fruit with the hope of securing hardiness. The seed of this production should be planted, which would necessitate a new start. This, of course, takes time and patience and should be finished at the central station.

Meeting of the Western Horticultural Society at Winnipeg, February 17 and 18.

PROF. S. B. GREEN, ST. ANTHONY PARK.

The meeting was held at the Agricultural College, which is perhaps five miles from the center of the city, and easily reached by street car lines. There were in attendance at the general sessions perhaps one hundred people. Much interest was taken in horticultural matters, and I was especially surprised at the interest taken in ornamental horticulture, which came in for a good deal of attention. Considerable attention was put upon the subject of raising potatoes, celery and other vegetables.

On Thursday night a large audience gathered in the auditorium of the college to listen to a general program on horticulture. At this meeting I had the pleasure of speaking on the development of agricultural education in Minnesota, in which the audience seemed much

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interested. On the morning of the same day I spoke to the students for about one-half hour at their assembly exercises, my general thought being the opportunities for young men who are trained in agricultural pursuits. I was also asked to explain the way we manage our horticultural matters in Minnesota, in which this society is much interested.

This society is young, but seems to be forging to the front, and I believe it is destined to exercise a very potent influence for good in the development of the horticulture of the great northern plain.

The thermometer was between 35 and 40 below zero during my stay, but this didn't seem to affect the ardor of these people in the least; if anything, it made them more energetic.

Lime-Sulphur Spray Compared with Bordeaux.

A. BRACKETT, LECTURER, FARMERS INSTITUTE, EXCELSIOR.

Lime-sulphur spray will take the place of bordeaux to a great extent, especially for such plants and trees as are liable to be injured with bordeaux, among which are peaches, plums, cherries and some varieties of apples, as the Jonathan and Ben Davis. In the peach growing districts they use it almost exclusively.

We need not consider the question as to whether it pays to spray or not—all experienced fruit growers know that we must spray and do it thoroughly, if we wish to grow paying crops of fruit. I shall devote the few minutes' time that I have to the consideration of the best, cheapest and most lasting spray. We have in the lime-sulphur spray the three ways of preparing it: first, the factory boiled; second, the home boiled; and, third, the self-boiled. We consider the self-boiled the most practicable. It is prepared by using eight pounds of the best unslaked lime and eight pounds of sulphur to fifty gallons of water. Put the lime in the barrel and put on sufficient hot water to slake it. As soon as the lime gets well started to slake pour on the sulphur, and the heat of the slaking lime will boil the lime and sulphur together. This should be applied in a thick whitewash to the body and larger limbs of the trees, and it will destroy any scale and keep the bark in a good, healthy condition, and to a great extent prevent the insects from climbing up the trees. This whitewashing should be done early in the spring, about the time the frost is going out of the ground. I used lime-sulphur as a spray, and also as a whitewash, on my plums and had a good crop the past year, and I shall give it a more thorough test on plums, cherries and apples.

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Now as to the cost. Sulphur can be bought by the barrel at three cents per pound, making eight pounds of lime and eight pounds of sulphur cost about thirty cents for fifty gallons of spray, as compared with fifty gallons bordeaux and arsenate of lead, which would cost eighty-seven cents. We can cheapen the cost of bordeaux and arsenate of lead by using home-made arsenate of lead—ingredients twenty ounces of sodium arsenate and ten ounces of lead nitrate, dissolved separately in two gallons of cold water and poured separately into a spray tank of 100 or 150 gallons of bordeaux.

The cheapest poison for bordeaux is one and one-half pounds of arsenate of lead, and two quarts of arsenic of soda (a chemist would call it arsenic of lime). It is made by dissolving one pound of white arsenic and four pounds of sal soda, boiled in two gallons of water. Two quarts of this and the one and one-half pounds of arsenate of lead is sufficient for fifty gallons of bordeaux, and will cost only about half as much as to use all arsenate of lead and still retain the adhesive quality of the arsenate of lead.

Mr. Busse: Why don't you put the poison in with the wash of flour and sulphur and kill two birds with one stone?

Mr. Brackett: We had some discussion on that point. It was decided it would not be best to do so, because if they were united one would kill the influence of the other, and they decided it was really not practicable to put the poison in with the lime-sulphur spray.

Mr. Busse: I thought, used in connection with the lime, it would not injure the foliage or the fruit.

Prof. A. G. Ruggles: I think Mr. Brackett deserves a lot of credit for bringing this lime-sulphur spray to the front at this time, because we are beginning to be a fruit-growing state. The lime-sulphur mixture originally was made for an insecticide, and was first used against the San Jos Scale. In that case it is used only in the winter time, when the trees are dormant. In the last two years they have been experimenting, and now they make a weaker solution and use it in the summer time. They use it as an insecticide as well as a fungicide. It is used against the bitter rot, and is one of the best fungicides we have.

Mr. Brackett: How weak do they mix it?

Prof. Ruggles: You make this concentrated solution at any time; you can make it in the winter and keep it as long as you like. You take fifty pounds of lime and fifty pounds of sulphur to fifty or sixty gallons of water and boil it an hour; then you pour off the liquid and put it in the receptacle and seal it up tightly to prevent evaporation; and then you take that liquid, and from it you can make a wash of from fifty to four hundred gallons, and you can spray from fifty to eighty trees, depending on the size.

Mr. Brackett: The gentleman is right, but it is just as effective if you use a larger quantity of lime and sulphur. As he says, with

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stock solution, using forty pounds of lime and forty pounds of sulphur, you get better heat, but eight pounds of lime and eight pounds of sulphur to ten gallons of water will answer the purpose.

Prof. Ruggles: It will not rust the fruit like bordeaux mixture; it will not replace bordeaux mixture, but it has its place as a fungicide. There is another point I want to call attention to—in regard to the arsenite. In the three insecticides we use, it has been found that where we use arsenate of lead with this lime-sulphur the material will deteriorate, but if that lime arsenite is used it will not deteriorate.

Mr. Pond: In regard to this mixture, just mix water enough with it to slake it?

Mr. Brackett: Yes, I mix it just thick enough so that with a brush it can be plastered on the tree, so that it will give it a good coat, so that it will stay on until spring. It will kill any bark insect and will make the bark nice and clean.

Mr. Pond: What time in the spring is it applied?

Mr. Brackett: As soon as the snow is off the ground.

Mr. Ellison: Will it protect a tree against mice?

Mr. Brackett: I would not say whether it will or not, but I doubt whether mice would gnaw through it. You can protect against mice so easily in other ways that it is not necessary to apply this wash. If you will make a mound of dirt around the tree six inches high, you need not be afraid of mice.

Mr. Gates: How about rabbits?

Mr. Brackett: They will not gnaw through.

Prof. Ruggles: I have a receipt for making that lime-sulphur for rabbits. You slake up a pound of good stone lime in one quart of hot water; boil this one pound of lime with one pound of sulphur so it will make a gallon. To this boiled mixture you add enough water to make three and a half gallons, and apply it warm. That is a good rabbit protection.

Mr. Pond: Can it be put on after freezing weather?

Prof. Ruggles: Yes.

Mr. Schutz: Would any of these sprays that contain poison, by falling under the trees, be injurious to poultry?

Mr. Brackett: Any of these arsenic sprays would, but not the lime-sulphur. If you spray with these arsenic sprays and the grass underneath the trees becomes coated and sheep or cattle eat the grass, it will kill them. I have known sheep to be killed by eating that poisoned grass. So you want to be careful.

Mr. Ellison: Should that lime-sulphur mixture be sprayed or painted on?

Mr. Brackett: On the body of tree and on the larger limbs, you can put it on easily with a whitewash brush, easier than you can by spraying, and you can put it on so it will remain on. Just go from one side of the tree to the other, and you can do it faster than by spraying.

Mr. Beach: How would you treat a tree that had been covered with oyster shell scale?

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Mr. Brackett: I would cover it with the wash.

The President: When would you do it?

Mr. Brackett: In the spring and fall.

The President: Would that solution protect against sun scald?

Mr. Brackett: I think on a dark surface it would protect against sun scald.

Mr. Crane: Would you mix the sulphur with the lime?

Mr. Brackett: Yes, I put the lime in a barrel, put on enough hot water to slake it, and then I pour the sulphur right in there on that boiling lime and that boils it all together, and the larger quantity you slake at one time the better you get it cooked together.

Mr. Pabody: How much water do you use for slaking it?

Mr. Brackett: Well now, I never measured it. I do it just as I would go to work to slake lime for plastering purposes. You want to put on water enough to keep it boiling. If you do not, it will become lumpy. Be sure to keep water enough on so it will not burn.

The President: Some of these preparations for the purpose of making a waxy complexion have arsenic in them. I remember years ago, old Doctor Cook, who was entomologist in Michigan, thought he would risk his old horse. He thought if the old horse didn't get anything to eat but grass that was sprayed with paris green, he could make a test of the matter. Whether the old horse thought he was having a good time because he had plenty to eat and no work to do, I don't know; but he lived and thrived on that grass, though I can't say whether he got that waxy complexion.

Mr. Brackett: I want it understood that there is danger of injuring or poisoning stock.

Mr. A. B. Lyman: About four years ago I changed from paris green to the use of arsenite of lime. We used white arsenic and sal soda, and we did lose some lambs. Since then we have had about a hundred hogs in the orchard, and they ate all the grass they wanted and it did not hurt them, but the lambs died on the spot. They lay on the grass right where they fell, and I am satisfied that it was the arsenic that killed them.

Mr. Alfred Terry: Is it true that a pig will not be poisoned by arsenic?

Mr. Philips: Well, the rattlesnake cannot poison the pig, so I don't think arsenic would hurt him.

Mr. Crane: Does spraying injure the hands or the harness on horses?

Mr. Brackett: I want to tell you that a fruit man cannot be very particular about his hands. (Laughter.) Any kind of spray you use will be hard on the hands. You will get them soiled to some extent, but I do not think this spray of lime-sulphur will injure the hands. I have even known some people to put sulphur between their fingers. (Laughter.)

Mr. Sahler: Is there any danger of that lime wash killing the trees?

Mr. Brackett: I don't think there is any danger. I can't see how it could kill a tree.

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Mr. Sahler: How long has it been tried?

Mr. Brackett: They have used it in Canada for years, right along.

Mr. Higbie: If I understand Mr. Brackett correctly, he believes spraying with lime and sulphur was the means of getting a good crop of plums.

Mr. Brackett: I certainly do.

Mr. Higbie: I want him to give his theory why it was conducive to setting a crop of plums.

Mr. Brackett: You have given me a hard one. I will say this—that our plums blossom, and the fruit becomes as large as peas and then falls off. Now, this lime-sulphur spray, when we spray it on the trees, does not affect the growth of the plums. I cannot tell you why they fall off, but I do know when I put on this lime-sulphur spray, they stay on.

Mr. Sahler: What time do you spray?

Mr. Brackett: I use it on the body and then use it to spray the foliage just the same as you would use bordeaux mixture.

Mr. Higbie: I was just going to tell what my observation was. I am very much interested in this subject. I have about two hundred and fifty plum trees of my own and was getting a very good crop of plums up to about two years ago. I tried to find out this past summer if that spraying had anything to do with setting a crop of plums. I found a few people who believed they obtained a crop of plums by spraying with this lime and sulphur this spring. I also found some who had not sprayed at all who had just as good crops. I did not find any one who had sprayed who did not have a good crop. That is the line I was working on.

Mr. Brackett: I would suggest to the gentleman that he help us out on this matter this summer.

Mr. Crane: In California where they use that sulphur combined with lime and other mixtures, they find it is very dangerous on account of its tendency to burn the hands and harness. As far as bordeaux mixture is concerned, I have been spraying for eighteen years, and I am not afraid of it, but I have heard it said that it burned the harness. It might not have been the same mixture you speak of, but it was done by the use of lime.

Mr. Brackett: As I said before, they do not recommend the use of poison with a lime and sulphur spray; they do not use it. Not that they do not use poison, but they use it with their bordeaux mixture.

Mr. A. K. Bush: We have a dozen to fifteen acres out in fruit, and as a rule it is very free from scab and insect injuries, and we simply use our orchard for a pig pasture. Wherever we pasture our pigs, we are entirely free from pests. That method recommends itself to us when pork is worth eight cents a pound. The pigs eat the windfalls and keep the orchard clean, and we have no trouble with any disease whatever. Of course, that is not a remedy against rabbits and mice.

Mr. Brackett: Mr. Bush's idea is all right, but very few of us can buy hogs to put in our orchard at the price they are today.

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Mr. Will Morris: Do you think the killing quality is as good as arsenate of lead or as good as paris green?

Mr. Brackett: I will say this: It will pay a great deal better to use arsenate of lead than paris green, because the effects of the arsenate of lead will last three times as long even if it does cost more to start with.

The President: I am going to ask Prof. Ruggles to say a word on arsenate of lead compared with paris green.

Prof. Ruggles: The sticking qualities of arsenate of lead are very much greater than those of paris green. The last spraying of our apple trees took place on the 20th of June, and on the 20th of September I took in and examined a handful of leaves and found arsenic still on the leaves, and the leaves had been exposed to the weather all the time. Last year it was on six weeks, but this year it remained on three months, during all that summer rain, and when I picked the leaves they still looked white. Any insect that ate those leaves got his dose.

The President: How about the cost?

Prof. Ruggles: The cost is nearly the same now, because paris green is high. If you buy the arsenate of lead in quantity, you can get it for 12c a pound, and to use three pounds to fifty gallons of water, it costs you 36c. People think they have to use one pound of paris green to fifty gallons of water, and sometimes they will pay 40c a pound for paris green. Paris green usually costs a little bit less, but taking the sticking qualities of arsenate of lead into consideration, it is cheaper in the end.

The President: Josh Billings spoke of the stick-to-ativeness of people, and the same thing applies in this case.

Prof. Ruggles: A good many people have obtained better results by using arsenate of lead on potatoes. They have found it even better than paris green because it does not burn the potatoes; and the only trouble is in getting it on at the right time. The young caterpillar can be killed with a small quantity of arsenic.

The President: I would like to ask the question whether you have had any experience with arsenate of lead used as a remedy against the curculio.

Prof. Ruggles: I reported on that last year. I found three pounds of arsenate of lead to fifty gallons of bordeaux mixture will save at least fifty per cent of the crop from being injured by curculio. I tried this this year on apples and last year on plums.

The President: That is the insect that makes them knotty and gnarly.

Prof. Ruggles: Yes, that is the plum curculio that works on the apple.

The President: But it fixes them on both.

Prof. Ruggles: Yes.

The President: And also the codling moth.

Prof. Ruggles: Yes, sir.

The President: When do you spray?

Prof. Ruggles: Just when the buds are opening spray for the

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first time, when the apples and plums are like peas. Ten days later spray again.

Mr. J. F. Harrison: There have been some questions asked regarding the effect of this spray on various things. Somebody asked the question if this mixture would injure human beings, stock, etc. I believe I asked Mr. Steller if it would hurt his calves. He said he did not know, so I thought I would take my chances anyway. He sprayed my orchard, and I left my calves and colts in there, with no bad results following. I have done that for two years. I had a lot of calves in the orchard—some nice-looking calves—and Mr. Brackett said, "How about the apple trees?" I said, "If I can't raise apple trees, I can raise calves anyway."

Mr. Brackett: I want to say it was as nice a looking orchard as I ever saw, but I did not keep track of the calves. I leave them in until they reach up to the foliage.

Spraying a Necessity.

O. W. MOORE, SPRING VALLEY.

In the early spring of this present year, Prof. F. L. Washburn—and his assistant, Mr. A. G. Ruggles—state entomologist for the state of Minnesota, asked the writer of this paper to do some experimental spraying in the apple orchard and report the results. The plan was to set apart two blocks of trees of twenty-five trees in each block. Block No. 1 was sprayed once just after blooming with bordeaux mixture, of 4-5-50 strength and four pounds of arsenate of lead. Block No. 2 was sprayed twice with bordeaux mixture the same as No. 1, but with only two pounds arsenate of lead to each spraying, with an interval of about ten days between spraying. The reader will take notice that block of trees No. 1 received one spraying of bordeaux mixture and four pounds arsenate of lead, and Block No. 2 received two sprayings of bordeaux mixture with the same amount of arsenate of lead, but the lead was divided in two applications. There were Patten Greening and Duchess in both blocks. We could discover no difference in the effect on the Patten Greening. There was a slight difference on the Duchess in favor of Block No. 1, where we sprayed but once with bordeaux and four pounds arsenate of lead. But the effect as a whole was very satisfactory.

We have been spraying for years past for curculio and codling moth with bordeaux and paris green with no good results as to the destruction of these insect pests. But our spray work for this year has been a success. We have never grown a crop of apples as free from insect deformities as we have the past season, and they hung well to the trees. The writer would recommend spraying to be carried forward in the orchard as follows: First, spraying before bloom

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when buds begin to separate on the spur-clusters with standard bordeaux and three pounds arsenate of lead to fifty gallons; again, just after blossoms fall, when the fruit is about the size of large peas. At this time the calyx is open, and the fruit is in an upright position and can readily be filled with poison. For this second spraying we are going to try three pounds arsenate of lead to fifty gallons of water. No bluestone at this spraying unless there should be fungi to fight. This second application is more especially to fill the calyx with poison to destroy the codling moth worm as he enters the fruit. This should be a rather coarse drenching spray and every part of the tree covered and the calyx well filled. For this second spraying, the operator should stand high enough or the spray tubes should be long enough, by fitting the nozzle at an angle, so that the direction and force of the spray may be downward instead of upward. A third spraying should follow in about ten days with standard bordeaux and three pounds arsenate of lead to fifty gallons. By using arsenate of lead we have a mixture that adheres to the foliage for weeks. Spray that we applied in May was still on the leaves when they were shed from the trees this last autumn.

It has been pretty well proven that apple scab carries over winter in the fallen foliage by Prof. Greene, secretary of the State Horticultural Society of Iowa, and the spores begin to multiply during the first warm days of spring, and as soon as growth starts they are ready to attack foliage and fruit. Bordeaux is the remedy. Thoroughness of applying the spray has as much to do with the results obtained as does the kind of spray used. It is safe to say that there are more failures from insufficient or poorly applied sprays than from all other causes combined. For all sprays after the second, a fine mist spray is desirable. The object in the latter spray is to place an even coating of poison over each fruit. The nozzle must be moved quickly from branch to branch to avoid waste of material.

In conclusion: Besides the valuable results accruing from the sprays which have been recommended upon apples against the curculio and codling moth and fungous diseases the fact must not be overlooked that secondary results are often secured in the destruction of other insects with these same sprays, which often more than pays for the cost.

Mr. Dewain Cook: I want to endorse everything that Mr. Moore has said in regard to spraying being a benefit. He was speaking of the benefit derived from spraying the orchard, and I know that is true. I put on sixty barrels of bordeaux, 3,000 gallons, and my material did not cost me to exceed half a cent per barrel, but the benefit

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would amount to hundreds of dollars. I consider it more important to spray my trees than it is to do any other kind of work in orchard management.

The President: What did bordeaux prevent at your place?

Mr. Cook: I sprayed for scab.

The President: Have you rust on the foliage?

Mr. Cook: Yes, they almost perished. One gentleman spoke about the benefit to the Patten Greening. There are some varieties it does not benefit.

The President: They are naturally resistant.

Mr. Cook: Yes, some varieties naturally resist scab. It is more benefit to some varieties than others.

Mr. Cook: Have we bitter rot in this state?

The President: We do have it occasionally, but not as bad as they have it in southern Iowa.

Norway Poplar as a Lumber Tree.

A. V. MC NEIL, WELLS.

My first experience in sawmilling was in 1900, when I worked in a small mill at Runeberg, a postoffice in the southeast corner of Becker county. I ran the engine and carried slabs and lumber one year. The next year my father rented a place nine miles north of New York Mills, Otter Tail county, with a sawmill on it, and I and my brother ran the mill. Sawing lumber and shingles, there was where I got my first experience with poplar. They brought native poplar to the mill to be sawed. I was very well impressed with the lumber, as compared with other lumber, and began to inquire about it of those that were using it, and I found that nearly everybody in the country preferred it to pine. They said it was almost everlasting, as it has a very fine fiber and contains quite an amount of oil. I had one fellow tell me that he made a floor in his kitchen of native poplar, and it was so oily that he could pour kerosene on it, and it would hardly show a grease spot.

I saw a house in Otter Tail county shingled on one side with native poplar shingles and on the other side with pine shingles; the pine shingles were being replaced the second time while the poplar shingles had remained for seventeen years nearly as good as they were when they were put on, which shows that the native poplar must have pretty good resistance to the weather.

I have sawed a good many thousand poplar shingles, also several thousand feet of the lumber. I was sawing a lot of poplar lumber for Christ Christenson, of Davies, Minn.; some of it looked pretty shaky,

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and I remarked that it was commencing to rot pretty bad. He said, "That is all right; it will never rot any more after it is sawed."

So a good many such things gave me a very good opinion of the native poplar, and when I became acquainted with the Norway poplar I noticed that it had a good deal of the nature of the native poplar, and I find in my experience that any tree that belongs to the poplar family makes first-class lumber. It would surprise you to see what good lumber even the old Lombardy poplar will make, that most folks deem hardly fit for firewood. It makes very good lumber for rough use; it has a great many knots, but they are solid.

Mr. McNeil's outfit working on a Norway poplar log 16x16 in. by 16 ft. long. A large share of this setting is poplar, in Fairbault Co.

There are a great many reasons why the Norway poplar is far superior to any other tree that is grown in this country for lumber. It has a very rapid growth; it grows faster than any tree I know of that we can grow successfully here if they are planted under right conditions and taken a little care of as to thinning out at the right time. I find that most of the Norway poplar groves in this section are left to stand too thick after they are eight to twelve years old, when if at that time they were thinned to about twenty by twenty or thirty feet apart, at eighteen or twenty years old they would saw about two hundred feet of lumber to the tree. The trees being 20x20

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feet apart, there would be 108 trees to the acre, and, sawing 200 feet to the tree, one acre would saw 21,600 feet of lumber—besides the tops and slabs for wood. Supposing the lumber to be worth $20.00 per thousand, which is very cheap according to the present price of lumber, at the end of twenty years the crop of one acre would be worth $432.00, or an average of $21.60 per acre per year, which is not so bad for the work and expense required, saying nothing about the wood and other crops that could be had off the same acre while the grove is getting started.

I have sawed between 1,500,000 and 2,000,000 feet of lumber in Faribault and adjoining counties, a good per cent of it being Norway poplar, the majority being cottonwood, which seems to give good satisfaction, although for several reasons it is not as good as the Norway poplar to my notion. One reason is that it does not grow nearly as fast; another, it does not grow as straight and has more large limbs and big knots. The cottonwood tree grows more tapering and not so high, while the Norway poplar grows high and keeps its size well up the tree, which is a very desirable feature for a lumber tree. And then, the cottonwood has a very rough, thick bark, while the Norway poplar has a much thinner and smoother bark, which makes it much nicer to handle in sawing.

I think the first Norway poplar I sawed was for James Kelly, near Walnut Lake. He had some very fine trees and made some very nice lumber, of which he built a corncrib and used some to make hayracks and boxes, gates and all such fixings around the place.

Three years ago I sawed 20,000 feet of Norway poplar on Mr. C. P. Chase's place, on the north bank of Walnut Lake, on shares, to halves. He built a fine little cow barn of his, and I sold my half to the First National Bank of Wells for $25.00 per thousand, to build a hog house on one of their farms.

I have sawed a great number of small lots of Norway poplar for different people in the country. There are a great many things it can be used for. One thing I have noticed is that nearly everybody that has any of it sawed gets a wagon box made of it, and it makes very good wagon boxes as it does not split easily, is quite light and very strong and lasting.

Norway poplar lumber may be used almost any place where any kind of soft lumber is used. It is far superior to pine in some places: such as plank for floor in horse stalls, as they say it does not wear out so quickly as pine, as it is so tough that the shoes will not cut it out so fast.

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For frame work in buildings it is much stronger than pine, and also for frames to large barns. In fact, any place where it will keep dry, or dry out quickly. It makes good sills if put on foundation to keep it off the ground.

The cow barn that Mr. C. P. Chase built of it he built in the fall, just as soon as we had the lumber sawed. Every stick of the

Trees in the foreground are Norway poplar. The one by which the man is standing is 19 inches inches in diameter breast high, and makes a log sixty feet long, 8 inches at upper end.

barn is Norway poplar but the shingles—even the battens, which he put on in the spring. He then painted the barn, and it is just as tight now as it was when it was finished and has not warped a bit. The sawmill is on Mr. Chase's place now, as we have just finished sawing another lot for him, of which to build a horse barn.

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This lumber is good cut in half-inch boards to make boxes for shipping goods, and we have an order for some now, ½ x 3 inches, for chicken crates. It would also make excellent fence slats or pickets. In fact, as I have said, I don't know where it could not be used where any soft lumber could, and for dimensions and roof boards, sheeting and floor lining in houses, I would rather have it than pine. I don't know but am of the opinion that it would be good timber for the paper mills.

I have heard that around Blue Earth they are using quite a lot of cottonwood for bridge plank, and I know if cottonwood will make good bridge plank, Norway poplar surely will.

I have had a few fellows tell me that the worms will eat cottonwood lumber, but I have looked it up pretty thoroughly, and the only cottonwood lumber that I could ever find or actually know about being eaten by worms is timbers that have been hewn out with the bark on, or the bark peeled off and the timber left smooth with the sweet sap dried on to it that lies between the bark and the tree. I have never heard of the worms working in any kind of poplar, and I don't think they will. It has a kind of peculiar smell, and I think there is some element in it that keeps them out.

I have noticed that there are quite a few farms in the vicinity of Wells that have young Norway poplar groves on them. The Norway poplar is a much pleasanter tree to have on the place than the cottonwood, on account of the cotton that flies from the cottonwood.

Dr. A. H. Street: Does the plank rot on a stable floor?

Mr. McNeil: No, and on account of the length of the fiber, which is rough and covered with fuzz, the horses' shoes will not cut through as with pine.

A Member: Does it grow best on low or high ground?

Mr. McNeil: I am of the opinion that it does not make any difference. Where you can raise anything you can raise the Norway poplar.

A Member: They were a failure with me where oats will not grow. I planted four acres of them.

Clarence Wedge: Mr. McNeil had a few photographs taken for our benefit. Most of the trees are about eighteen inches through at breast height. The one in the lower right hand in the grove is eighteen inches through at breast height and is estimated to be sixty feet long with a diameter of eight inches at the top, that is to say, that the taper in the sixty-foot log is only ten inches—a fine log. The upper right hand photo illustrates how few limbs they have. A good deal more than nine-tenths of the wood is in the body of the tree where you get your lumber. The upper one is a photograph of a tree that has had a growth of only three years. These measure fifteen inches around and are about twenty feet high.

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Mr. Fred Cowles: I have grown the Norway poplar three or four years. I have tried them on wet soil. I planted several thousands, and the ground was covered with water for three weeks. They came through all right and made a good growth.

A Member: Have you seen wagon boxes made from the Norway poplar?

Mr. McNeil: Yes, sir, I have. They always ask you to saw the lumber thicker than ¾ inch. They want thicker lumber than you can get at the lumber yards. Whenever they want a wagon box they tell me to cut the boards an inch thick so that they can be dressed on both sides. The Norway makes excellent wagon boxes.

Mr. Wedge: I want to ask what he judges to be the particular difference between the cottonwood and Norway poplar. If he can determine by chopping into it?

Mr. McNeil: You can tell as soon as you saw into it, as it saws easier on account of its straight grain and scarcity of knots. But I can tell as soon as I see it, as the wood of the Norway poplar smells different and tastes different. The cottonwood has rough bark, and the log tapers off too fast. The Norway poplar has smooth bark, grains straight and holds its size well up in the top of tree. The Norway poplar is better timber for it is stronger. In the cottonwood the limbs sometimes grow from the heart, but you seldom find any of this in the Norway poplar.

A Farmer: In regard to the breaking of cottonwood. I used a two-inch plank seventy inches long, put a two-inch plank eighteen inches long across it and two men got on and tried to break it but could not. They could spring it down but could not break it.

A Member: Is there any difference as to the time it was cut?

Mr. McNeil: If you want a log twenty or thirty feet long, in sawing the cottonwood you will be wasting lots of lumber. The Norway poplar does not taper, and you have a straighter tree and so less waste.

It is generally calculated that the timber should be cut as soon as the leaves commence to fall. The sap goes down into the root, and it is time to begin cutting then. I cut some for the Bank of Wells in July, but it was hard work on account of the warm weather. We succeeded in cutting it and piled it cris-cross and left it all summer. They claimed that the lumber was just as good the next summer when they built as ever.

Dr. A. H. Street: When is the best time to cut lumber?

Mr. McNeil: The winter time is the best of all. I have cut in the summer time, and it has been all right.

A Member: A business man—perhaps you know him—Will Waldron, had his logs skidded up and left over one year. He said he would rather use lumber from logs that had been skidded up one year than have it sawed at the same time they were cut. Lumber from logs skidded up over a year has a chance to wilt and will not warp. A great many people do not know how to pile lumber.

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Plant Breeders' Auxiliary in 1909.

CLARENCE WEDGE, SECY., ALBERT LEA.

The work of the plant-breeders of our society for the past year, as shown by the reports sent in to the secretary by over one hundred members, is going on in a most satisfactory way, fully justifying the venture of four years ago in forming the workers in this branch of our art into a separate organization. The total membership now numbers 240, and it would be, indeed, interesting to know fully what has been undertaken by the whole number, but we shall have to content ourselves with a summing up of what is being done by the one hundred that have reported, and guess that the 140 who are hiding their lamp under a bushel are making a large addition to the sum of the work set forth in this report.

The total number of apple seedlings under trial reported by the 100 members is 10,873, or a little over 100 trees per member; the total number of plums under trial is 4,978, or about half the number of apples. When we consider that this represents that many distinct varieties, the larger share of them doubtless from the seed of our best northern varieties, it would seem that the chance of our getting something of great value from such a large setting is very good, amounting to almost a certainty. Only seventy-seven of these seedlings are reported as fruiting, and we glean from the general tenor of the reports that by far the larger share of these seedlings are from very recent seeding, and directly due to the encouragement given by the society and its auxiliary. Indeed 3,034 of these apple seedlings are reported as being grown and entered for the $100 annual premiums to be given by the society, beginning in the year 1912. As these by the terms of the premium offer are to be grown from seed of selected home grown varieties, we are assured that they represent the utmost of promise for the future orchard varieties of our section.

While the apple and the plum are the two most popular fruits with the plant-breeder, other things come in for a share of his attention, and roses, peonies, pears and grapes in the order mentioned attract increasing attention.

One in ten have practiced hand-pollination with some success. In answer to one of our questions asking what assistance or material would be most helpful to them, we had a number of requests for instruction in hand-pollination, and several would like to have seed furnished them.

In answer to the call for suggestions for the further work of the society our member from Moorhead, Mr. R. M. Probstfield, suggests

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that we secure seed of pears from a region with a climate as near as possible like our own for distribution to the society; another member suggests that we offer premiums for a larger line of seedlings than apple alone; another promises a good response if the society will offer premiums on seedling roses; and a number ask for a further distribution of apple seed.

Among the various reports we glean the following items of interest:

Our old friend, Mr. H. Knudson, of Springfield, the originator of the Compass cherry, is still at work and has produced a promising seedling of the Japan plum and a seedling pear of large size.

Our co-worker, just over the border in Iowa, Eugene Secor, of Forest City, is devoting himself to the breeding of peonies, keeping a careful record book of his work. About twenty seedlings have bloomed the past season, and he has reason to expect a much larger lot to show bloom in 1910. This doing one thing at a time and doing it well is certainly to be commended as the most promising of valuable results.

O. W. Moore, of Spring Valley, reports a seedling apple of good quality, much like the Wealthy, that keeps till May. He has become interested in seedling potatoes and has produced several varieties that he thinks worthy of propagation.

I. A. Fossom, of Virginia, Minn., has 101 apple, four plum, thirty-two pear, twenty-eight grape and thirteen peach seedlings growing on his place. Such a list truly spells "enthusiasm."

H. Volkner, Holdingford, Minn., reports a seedling pear that is perfectly hardy but has borne no fruit as yet. It is a seedling of a tree that is 300 years old.

J. F. Teigland, Minneota, reports a sprout from a graft that produces "fruit much like the Malinda but of very much larger size. Tree as early bearing and as productive as the Duchess. I can use the smallest of these apples and take first prize over Malinda."

Hon. R. M. Probstfield, Moorhead, has fifteen pear seedlings and a seedling of the Hyslop crab, coral red color, size of Transcendent, fine aroma, good for all the uses of a crab apple and as productive as burning bush.

H. H. Pond has fruited sixty apple seedlings and exhibited thirty-eight of them at the state fair. Has kept four of these till April and one till June.

A. Schlemmer, Chisago City, has twenty-five cherry seedlings and reports a seedling apple seven miles from his place much like Duchess

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but better to eat out of hand, less acid, and more juicy, and keeping longer. Tree hardy and prolific.

John Bisbee, of Madelia, has 3,000 apple seedlings out, and reports six of those that have fruited of superior value. His suggestion for the good of the society is, "Keep everlastingly at it."

N. R. Klug, Caledonia, reports a seedling on the place of Lewis Backer that is of superior value. Tree seems to be very hardy, fruit size of Wealthy and quality similar, good color and will keep a month longer.

R. A. Sodergren, Marine Mills, reports a seedling somewhat like Warfield but very much larger and sweeter. Has had about sixty varieties but finds this superior.

Mr. Anton Wildering, of Freeport, has seedlings of the Compass of promise, and several pear seedlings. He has fruited one of the Gideon seedlings sent out by the society some years ago and finds it a valuable crab; he has named it Gov. Johnson. We find that quite a number of the Gideon seedlings of that distribution are fruiting throughout the state.

The secretary has at last arranged to receive and record the names of seedlings of promise, which is mentioned in the constitution as one of the objects of the society. This is to be understood as not only a register of pedigree but also of performance, and any crop or series of crops that they have borne, of premiums taken at fairs or horticultural meetings will be duly recorded. The register will be open to any variety originating in the north from the first settlement of the country.

Mr. Wedge: Perhaps I ought to state that in the report I have read I do not include any of the professional plant-breeders, like Mr. Haralson, superintendent of the State Farm, or others, like Mr. Patten, of Charles City, whom we have the honor of enrolling among our number. This report embraces the common people like you and me who are trying to supplement this work. It is somewhat remarkable how the people are taking an interest in the growing of pears. We have our apples and plums, and now we are looking a little higher.

Mr. Probstfield: Is the parentage of the seed given in the reports?

Mr. Wedge: No, the report did not call for that.

Mr. Probstfield: I think that should be given, for the reason that if there are one or two different pears that could be raised from the seed, then it would be important to know the parentage of the fruit. I have given the parentage of the pears I have grown from seed; it is the Winter Nellis.

Mr. Wedge: I will give a little further answer to Mr. Probstfield's question in regard to the apple feature. A large number of them are registered with Secretary Latham. Those competing for

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the $100 premiums pledged to give the parentage of the seedling, and it is registered with the secretary.

Mr. James Arrowwood: I have two pear trees in my orchard, and they are doing well. They came from Stockholm, Sweden. One tree is about four feet high and spreads out from the ground. It is doing very well and looks to be hardy.

The President: Mr. Arrowood is doing a lot of good work in raising seedling plums, apples and pears. He is located in Hubbard County, 160 to 200 miles north of here.

Mr. Wedge: Flemish Beauty is a variety that is fruiting throughout the state more than any other, and it has seemed to me it is as good as any we know of to get seed from and as available as any.

Mr. Richardson: Flemish Beauty seems to be hardy enough in southern Minnesota, but the trouble is with the blight. It blights terribly.

The President: Yes, but it blighted thirty years ago in New England, and they are still raising it.

Mr. Richardson: Mr. Dunn has some large trees. At Charles City, Iowa, I saw on the grounds of Mr. Patten trees that had been bearing for fifteen years that had not blighted.

Mr. Wedge: Do you know the kinds that Mr. Patten is growing? They are the Kieffer, the Longworth and the Fluke. All those are comparatively free from blight, especially the Longworth and the Fluke.

Mr. Husser: Now, we have the apple and the plum, we are striving for something higher, and we have come to the pear. I always thought the apple was the king of fruits. Am I mistaken?

Mr. Wedge: The plant-breeders auxiliary has a membership of about 240. We are not satisfied. We want to get it up to 500. We think we ought to enlist the energy and interest of a larger proportion of our 3,000 members of the horticultural society. We want the membership of the auxiliary to grow with it. We have a number of men in the auxiliary who are trying to work out this problem. Those who are members of the State Horticultural Society can become members of this auxiliary by sending their names either to me or to Secretary Latham.

We expect you to make a report each year, in the way of answering simple questions as to what you have done during the year, so that we may use the reports to help along the general enthusiasm. I hope to get a large number of members at the close of this session, and I would not like to have any of you go away who are at all interested in this work without letting me have your names.

The President: Mr. Loring put up a premium of $100 for a new variety of plum of merit, and he has always shown great interest in this work. We would be interested in hearing a few words from Mr. Loring. (Applause.)

Mr. C. M. Loring: It is three years since I have had the pleasure of meeting you at the winter meeting, and I assure you I have missed a great deal of pleasure and of profit, and when the time arrived. I almost wished myself back from California, where I am now making

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my winter home. I have remained here this year for the express purpose of being present at this annual meeting. (Applause.) I offered a premium three years ago—I think it was for the best plum—and I think the committee almost decided to make their award at this last session. I was up in the Santa Clara Valley, and I was much surprised to hear that over five million dollars were taken out for prunes and plums. I do not believe there is a single plum raised in the Santa Clara Valley that is more palatable and has a richer flavor than the plum Mr. Knudson sent here, hoping to take the premium which I offered. But it was not quite up to size, although I do not believe in large plums. However, the committee thought it was not quite what we ought to have here. I hope another year somebody will take my money. I have thought since that time that I ought to have offered a second premium, so I will add now to this premium of $100, a second one of $50 as a second premium. (Applause.) I know it is not the money that you gentlemen are striving for, but I know it is always a satisfaction to know that we have the best of anything and that we have taken a premium for it. If the premium is ever so small, we all know that from our school days up we have striven to do our best, and it has given us satisfaction to know that we were awarded a premium for the best, and it is the same in this Horticultural Society.

Now, I want to say one word more. Just as soon as we raise a good plum, we must raise enough to keep those people out there in the Santa Clara Valley from making fortunes from us. (Applause.) I believe we can do it. When I came here fifty years ago there was not an apple raised in Minnesota that was worth calling by the name of apple, nothing except a wild crab, and we had to put saleratus water on it to take the pucker out before we could use it; but now at our last state fair the exhibit of apples was such that any man who lives in the state of Minnesota and came here when I did could feel proud enough to almost swell up. We are going to raise apples, and we are not going to allow people who are raising a thousand dollars' worth of apples on an acre out in Oregon to take the profits of our orchards. If half of the trees or more in the state of Minnesota were cut down today we would be a great deal better off. The reason we do not get better prices for our fruit is because we have so many varieties that no man can send a large amount of the same kind of apple to the market, because he has only a few of one kind and a little of another. They sell out there in Oregon some of the most beautiful apples I ever saw in my life, but there is no flavor, no quality in any of them. I have never yet seen an apple that came from Oregon that had flavor.

Take our Wealthy apple: If we were to do with our apples as they do with their oranges in California, throw away part of them and pack in boxes or barrels only those that were of a uniform size and color, we would get $3.50 a box for apples instead of $1.50 a barrel. Apples raised at Minnetonka are as good as apples raised in any part of the world, but those apples are brought to Minneapolis and sold for fifty cents a bushel, while apples coming here from Oregon with no flavor whatever are selling for $3.50 a bushel box. There is no excuse for such a thing as that. It means that fruit growers must be more careful in picking and packing their fruit. I have seen

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piles of oranges, culls, as large as a house, thousands of bushels of oranges thrown away. They would not send an orange to market that had the least abrasion of the skin or that was not in every way perfect. If we should sell one bushel of apples packed as they should be instead of three bushels as they come from the orchard, we would get as much for one bushel as we now get for the three.

It is the same with plums, there is no reason on earth why we should not make a market for plums. We have plums, we have good plums, but they come to market in such shape that people will not buy them. They must come to market put up in an attractive manner, and I am interested, living here as I have all these years, in seeing fruit getting better and better until we raise as good fruit as was ever raised in New York. There is nothing better grown, and we are going to do it, and we are going to get the prices for it as soon as you gentlemen make up your minds that you must send your fruit to market in an attractive and perfect manner. (Applause.)

Planting the Fruit Tree.

JOHN P. ANDREWS, NURSERYMAN, FARIBAULT.

In planting the fruit tree, we can afford to do it well, for when done it is done for many years, for the whole lifetime of that tree, and its future usefulness depends upon its adaptation to the location, proper planting and after care.

As the place has to be decided upon before we plant, we would select the best we have, bearing in mind that any location where corn or potatoes will thrive will produce an abundance of fruit for the family if proper varieties are selected, planted and cared for. So there is no excuse for any man who owns a spot of ground whose family isn't well supplied with fruit.

However, if we have a northern or eastern hillside, even if so steep, rough or stony as to be entirely worthless for farm crops, we should use it for the orchard. A clay subsoil is desirable for the best results with the apple. If the land is tillable we would plow fairly deep and run a subsoil plow in the furrow after the crossing plow. If a subsoiler is not at hand, use a single shovel plow instead, putting it down well to loosen up the subsoil.

If there are many trees to be planted it will forward the work to furrow out with the plow where each row is to stand. Trees to be planted should be well protected from sun or wind and only taken out as fast as planted. Cut off from the under side, with a sharp knife, all bruised or broken roots and the ends of others to sound, fresh wood. Take out all limbs that are not growing outward and about one-half of the last year's growth of remaining limbs, to balance loss of root in digging. Dig a hole large enough for the tree to stand three to six inches deeper than it stood in the nursery, with roots straight-

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ened out in their natural position; fill in good, fine soil around the roots, using the hands to work the dirt in under the roots and feet to firm the soil as it is being shovelled in. When roots are covered sufficiently to avoid injury, use a tamper and make the ground as solid as though you were setting a post. Then a little loose earth on top, leaving the surface a little lower around the tree, so as to conduct the water toward it instead of from it.

In case the ground is very dry or very wet and clammy, it is sometimes better after covering the roots with soil to pour in a pail or two of water, enough to make it quite sloppy. Then after the water has settled away, put in more earth and tamp thoroughly. The firming of the soil around the tree cannot be overdone. A lack of this firming is probably the cause of half of all the failures. In this connection we would say the best way we have found is to plant in the fall, when the ground works so much more easily than in the spring. When this is done and your trees are slanted well to the south, just bend them down to the ground and throw a few shovels of earth over them. In the spring raise the top to the proper slanting position. The soil is by this time well settled around the roots, and the tree makes a much better growth than when planted in the spring.

A few years ago mention was occasionally made in the papers of the Stringfellow method of planting fruit trees in Texas. He took off all the lateral roots, made a hole in the ground with a crowbar, filled it with water, and crowded the single tap root of the tree down into it. This certainly has some advantages—it would be easily planted, and when one wanted to replace it with a live one, it would pull up easily. Such treatment as this could only be successful, we think, when trees are quite young, without branches, and the stem well cut back.

During the past summer several horticultural papers have quoted an article from a London journal, reciting the results from certain experiments in planting trees in England that are radically different from common practice. In fact, common practice, according to the report, is precisely wrong; it is all exactly the opposite of what it should be. It says the proper way to plant a tree is to make a small hole, double the roots up anyhow and stick the tree in, throw in soil, and ram it down as hard as if you were setting a gate post. You will note they rammed the soil down solid, and the common practice over there, as with us, is to press it down carefully with the foot. Their solid planting in the experiments was a success in spite of their doubling up the roots and sticking them into a small hole.

Mr. A. J. Philips (Wis.): Please state again what you said about planting. The first orchard I set out was on a slope, on top of a hill.

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I began at the bottom and went to the top. On the top it was so steep that when the apples fell off, they rolled thirty rods down the hill. I got sick of it.

Mr. Andrews: There is a difference in hills; some hills are not so steep.

Mr. Philips: Tell them the best place to set them.

Mr. Andrews: The best place is on a north slope.

Mr. A. Brackett: I would like to know whether the tree planters of Minnesota are making a mistake or whether the tree planters of the west are making a mistake. I would like to know whether it is best to plant a three or four-year-old tree, with all the roots cut off, or one or two-year-old trees with all the roots on. They plant them with half the labor and a great percentage grow, and they are longer lasting. Are we making a mistake or are they?

Mr. Andrews: I always thought we made a mistake in planting too large trees.

Mr. Schutz: I would not plant anything but a two-year-old tree.

Mr. Andrews: For our own use we pick out a tree three or four feet high, without any limbs, if we can find such a tree.

Mr. Arrowood: It has been my experience for years that a two-year-old tree was large enough. You can take it up with all the roots—but take a five-year-old tree, you have to cut off the roots, and they will not do so well. A two-year-old will come on in the spring as well as a four-year-old.

Capt. Reed: I disagree with Mr. Andrews in regard to setting an apple tree on a north slope. I think that theory has been exploded; it has been with me for years, and for this reason: On a north slope a tree does not mature as quickly; the soil is usually poorer and it will not grow as fast. I bought a block of trees from Mr. Andrews in the year 1900. I set them on a north slope and on a south slope, and those on the south slope have lived and thrived and grown much faster than those on the north slope, and they appear to be in better condition. For years I was deterred from setting an apple orchard on account of everybody claiming it must be set on a north slope in order to grow apples. Gentlemen, I tell you there is nothing in it. (Laughter and applause.) If you want your trees to grow, set them on a south slope, but mulch your trees in winter, so they will start late in the spring. That is where the danger lies.

Mr. Brackett: I just want to endorse what the gentleman said in regard to planting on a north hillside. He acknowledged that all the people told him it was better to plant on a north slope, and he seems to be the only one to disagree with that theory, and I would rather take the advice of all the people than take the advice of one person only.

Capt. Reed: I would say that all the people are wrong sometimes, and only one is right.

Mr. Philips: When I began setting trees, I saw an orchard that was set out in 1860. It was set out partly on a north and partly on a south slope, and those trees on the north slope were bearing for thirty years, while every tree on the south slope had been dead for twenty years. That is a fact, and I can prove it. (Laughter.) A fellow out

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in the other room asked me to tell a story. I don't want to tell a story, but in talking about this theory of setting trees, it just reminded me of the Stringfellow method that is used in Texas. Mr. Gale and I were traveling, and he told me this story. A man was crossing the ocean; he was an infidel, and he took no pains to conceal his views and beliefs. While he was on the ship a severe storm came up, and he became frightened. He went to the captain and wanted to know if there was any danger. The captain told him there was no danger yet. By and by the captain thought he would have a little fun with him, so he said to the man, "I am afraid we are in great danger, and if you have never prayed before, you had better pray now." The man prayed like a whitehead, and after a while the storm calmed down and the captain said to the man, "I thought you did not believe in prayer? I thought you were an infidel." The man replied, "I have learned something. My theory is all right on land, but it isn't worth a ——— on water." (Laughter.) That Stringfellow method may be all right in Texas, but it is all wrong here.

Capt. Reed: Philips' theory may be all right in Wisconsin, but it isn't worth a cent in Minnesota. (Laughter and applause.)

Mr. A. W. Krueger (So. Dak.): I am much interested in this question of planting trees. I used to wonder when I lived in this section of country where you have trees why it was that all the trees that looked thrifty and healthy were on the north slope, while there were none on the south slope. I found that not only in Minnesota, but wherever I went, clear up in the Rocky Mountains, I always found the best trees on the north slope. I venture to say why this is so. They say that the trees on a south slope in spring will start the flow of sap early, and they will alternately thaw and freeze. I find in Dakota on our tree claims that the trees on the north side are by far better than those on a south slope, and nobody thinks of planting on a south slope. I would never take my chances on a south slope; I would never go against nature.

Mr. Probstfield: I have been in hot water all the time because I have no slope at all. (Laughter.) If I wanted to plant, I would plant on a north or northeast slope, but I have no slope. I cannot plant on a slope; my land is all level, so I have to make the best of it and plant my trees on the level. This meeting makes me unhappy because I have no slope at all; but the trees grow all the same, so I ought to be satisfied.

Judge Moyer: I don't think Captain Reed has any slope to amount to anything at Glencoe.

Mr. Busse: A great many are deterred from planting trees because of being continually told they have not the proper land. By practicing mulching, trees will do well on a south slope. I had some Patten Greening and some Okabena set on both south and north slopes, and with the proper attention they did well; I did not see any difference, although in the matter of holding moisture there is something to be said in favor of a north slope.

Mr. Arrowood: In regard to mulching, there has been some claim made that it keeps the frost in the ground and retards blossoming. I do not believe mulching will retard the blooming period of a tree at all.

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The Culture of Pansies.

CHAS. RIXON, GARDENER, ST. LOUIS PARK.

The pansy is a diminutive plant and would seem a small object for a paper at so important a meeting. But it certainly is a thing of beauty and, perhaps, makes up in number what it lacks in size. The demand is immense and increasing. I think the gardeners of Minneapolis alone sell on an average ten thousand plants a day through the month of May, and if I were within reach of the Minneapolis market I certainly should get my plants there if I purposed having them in my garden next year. This may be taken with a grain of allowance, seeing I am one of the guild, but the gardeners *do* raise very fine,

Residence of Chas. Rixon, on the Excelsior road, six miles west of Minneapolis.

sturdy plants and sell them packed neatly, a dozen in a basket, every plant in blossom; and it takes a good *long* time to raise good plants. I presume there are those here, however, who would do that for the pleasure of seeing them grow and develop. To those I might give a few pointers.

The seed should be sown by February 1st. Buy it of a reliable party and insist on its being new seed. Don't buy a mixture. The pansy takes on an almost infinite variety of color, from the purest white to the deepest black, but there is as much difference in the quality of its color as there is in the flavor of apples.

There have been developed a great many strains differing in color, the different individuals of which bear a close resemblance, but I never saw a package of seed of any variety that came exactly true to name. Most people seem to like pansies in great variety. Hence the

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mixtures, and here is where the seedsman gets in his fine work. He don't seem to be able to resist the temptation to put in all his common varieties and, worse yet, old seed, which is never more than one-half fertile. I do not know of more than one really good mixture, and I've tried a great many. So get single varieties and mix the plants when they bloom and you put them in your garden.

Plant the seed in flats, or shallow boxes, so you can change their position as regards temperature and light. The dirt should be about three inches deep, and clay loam is best. From start to finish do not use manure, rotten or otherwise, leaf mold or sand, except the latter

Pansy beds at Chas Rixon's gardens.

to cover the seeds. They must have heavy soil to do best. Sift the dirt, press it level with a bit of board, sow your seed evenly, press again, cover very carefully with sand as fine as corn meal used in cooking or, better yet, put on just enough fine dirt to cover the seed and then cover again with sand enough to hide the dirt, the difference in color enabling one to get the seed covered very evenly and not more than one-eighth of an inch deep. The sand is used so a crust will not form and rise bodily instead of allowing the seed to come through separately. 1,000 seeds may be sown to the square foot.

Water thoroughly with a fine rose sprinkler or lay on a piece of burlap so as not to wash the seed out. Keep the seed thoroughly moist till they begin to come, and then withhold the water till they are mostly up, and then water when they begin to look dry. Too much water while coming through will often make them damp off.

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When first sown the seed should be put in the sunshine and kept warm till coming up. Ninety degrees will not hurt them, but when coming up they should be shaded from the hottest sun. After this keep cooler. As soon as large enough to handle, transplant to the greenhouse, bench or other flats, one and one-half or two inches apart, where they can remain till transplanted into the open ground. Gardeners keep them growing till they begin to crowd and then transplant to cold frames, where they stay and blossom in time to set in the garden when sweet peas are sown.

If at any time they get slender give less water and heat. The pansy is a cool weather plant and cannot be forced. Even freezing will not hurt it when grown slowly and let alone till the frost comes off. Getting slender seems to be the greatest trouble with the plants.

When put into the garden they should be short, stocky plants, full of buds and blossoms. The same conditions with regard to soil still hold. As fine plants as I ever saw were grown on ordinary soil where the sod had been removed. Never allow them to get very dry, or the blossoms will dwindle in size. Water thoroughly every time they get dry and cultivate the soil between times.

There is a prevalent idea that pansies do better in the shade. Perhaps if they are shaded, say from twelve o'clock to three in hottest weather, it would be better, but it takes *sunshine* to bring out plenty of fine flowers.

In ordinary weather a blossom comes out one morning, grows till the next, and on the third day wilts. One should go over them every day and pick the wilted and as many of the fine, large blossoms as they wish, leaving the small ones to grow.

A few years ago the finest kinds as regards color were often small, but of late most varieties have been improved in size till they are in the giant class.

In picking pansies, should they grow on long branches (and they will get long towards midsummer) take part of the branch itself, which would be in the nature of pruning. In this way the plants may be kept in better shape. Indeed the whole bed can be cut back if the plants get too long. Then water well and cultivate, and new shoots and new blossoms will appear. A better way, perhaps, would be to sow seed in June and plant out in August. Then the plants would be in their glory through September and even up to December, as some were this year. If one cares to raise them from year to year he can by selection get the very choicest strains, and they surely will make a royal show well worth the trouble.

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Propagation from Green Wood Cuttings.

MAX PFAENDER, NURSERYMAN, NEW ULM.

In the propagation of roses, gooseberries and various ornamental shrubs, the nurseryman who lacks a greenhouse can readily help himself by using the cold frame or propagating frame and a hotbed with sand. So far I have had only two years' experience in propagation from green wood cuttings. This past summer I have had good success with all plants that I worked with and will give you a brief account of my experience.

The frames were ordinary hotbed frames six by twelve feet, constructed out of two inch planks. Such a frame will hold four sash, each three by six feet. Set this frame into a hole four inches deep and put in five inches of good clean sand, getting it level and moderately compact. Give the sand a good sprinkling and then put on the sash, which should receive a good coating of whitewash in order to exclude the direct rays of the sun.

The cuttings may be put in immediately. Cut them from the fresh, green growth, not too succulent and not over-ripe, but make them of good thrifty green wood not too soft and spongy. As a rule the cuttings may be taken from the plants any time after June 20th. Gather them in a basket, take them to the shed or some shady place and there prepare them for planting. Cut off the butt ends with a very sharp knife, just below a bud, and trim off the lower leaves, leaving three or four at the tip.

Cuttings may be from three to six or seven inches long. Spirea Anthony Waterer grows well when only two inches long. Gooseberries and dogwoods may be as long as eight inches and do well.

Take the cuttings to the propagating bed and there, with a board and some sharp instrument, make a slit in the sand to receive the cuttings. Put them in about one-third of their length and firm with the fingers. Have the rows three or four inches apart, cuttings two inches apart in the row. Immediately after planting give them a good soaking and thereafter water three times a day, allowing three big sprinklers to each sash, each time.

After three or four weeks fine bunches of roots will have formed at the inserted ends of these cuttings. Then in a sunny place prepare beds four by sixteen feet, well-worked and of rich soil. The cuttings are transplanted into these beds in rows six inches apart. Give them a good soaking and then give them total shade for three or four days, then give partial shade for two or three days and thereafter full sun-

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light. It pays to cultivate the little plants and to water them whenever necessary. The idea is to make them grow as much as possible before winter sets in. In the fall dig them and store in the cellar or heel in outside. The following spring they are transplanted into nursery rows.

To propagate roses a pit is made about two and one-half feet deep and filled with stable manure as for a hotbed. On this a floor of rough boards is placed, the boards being nailed onto six-inch joists. This is to prevent direct contact between manure and the floor.

Place the frame on the floor and fill in four inches of sand. In this plant the cuttings of roses, using one and two eye cuttings made of wood with the buds well ripened. Leave on part of the upper leaf but remove the lower one.

In two or three weeks roots will have formed, and the uppermost bud will start into growth. When this growth is well along, say four to six inches, transplant into flats. These flats can be placed in a frame with shade for a few days and then gradually given full sunlight. During the winter store in a cellar and plant out into nursery rows the following spring. That summer most of them will make No. 1 plants. Crimson Ramblers and other climbers do especially well when propagated in this way.

Hardy Perennials.

W. E. FRYER, NURSERYMAN, MANTORVILLE.

What would induce us to part with the grand clumps of phlox, peonies or iris, that have stood along our paths in our front yards so long and greeted us each year with their brightness and beauty? They fill a place in our gardens and in our hearts that nothing else can supply. When once planted they are good for a lifetime, and we come to regard them as part of our homes. Of all the perennials, the phlox and peonies are my favorites. With these one can have blossoms from May until November.

The Fringe Leaf peony is in bloom Decoration Day or before This is not a large peony, but as bright a crimson as the Gen. Jacquiminot rose. It has fringed foliage, and this alone is very attractive.

The next to bloom is the Officinalis Rubra, the "piny" of our grandmother's garden. It is as bright a crimson as the Fringe Leaf and larger. When this is through blooming, the pink, white and red begin to bloom and remain in bloom until the end of the season, about July 10th.

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The Festiva Maxima is considered the best of all the white varieties—pure white with center petals occasionally tipped red. This variety has been in cultivation for more than fifty years and is still in great demand and high in price.

Francois Ortegat is one of the best late dark crimson varieties. Brilliant crimson, full, double flower.

I believe the perennial phlox will give one more flowers than any other perennial for the least labor. The tiniest plants will blossom the year they are set and continue to blossom until cut off by hard frosts, about November first. If you wish to prolong the blooming season of your established plants, cut the center shoot soon after it blossoms, and side shoots will appear later and blossom as freely as

Residence of W. E. Fryer, Mantorville.

the main shoot. Newly set plants blossom some later than established plants, and this helps to prolong the blooming season also. They begin to bloom in July. A light covering of leaves, strawy manure, etc., is necessary when they are planted in exposed positions, or when we have winters without snow.

Out of twenty-five named varieties and over 100 distinct seedlings, I will give a short list, those I think about the best of their color.

James Garland—Pure white, large crimson eye, tall grower.
Lustre—Large, rose pink, dark carmine center.
Purity—Pure white, large truss. I consider this the best white.
Feu de Bengel—Fiery red.
Embrazement—Coppery red, purple eye.
Pluton—Crimson purple, fine shape.

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Iris are all very hardy but the Japan iris, and these are rather erratic. Some seasons they blossom very well and are showy and fine. I have grown these with blossoms over eight inches in diameter. The leading colors are blue and purple, but there are white and many combinations of colors. They blossom in July when all other iris are through blooming.

A solid row of Purity phlox.

The German iris is smaller, very hardy and blossoms in May and June.

The Golden Glow is very hardy and sure to bloom in any location.

Bleeding Heart—An old stand-by, hardy and good.

Platycodon—White and blue, fairly hardy and good.

Hibiscus—I do not consider these very desirable. They blossom the second year after planting very well, but after that dwindle and die.

Delphinium (hardy larkspur) is very hardy and desirable. They begin to bloom about the middle of June, and by cutting off the plants close to the ground as soon as the crop of flowers has faded a second and third crop will succeed.

EMPLOYMENT OF THE FAMILY.—I know of nothing rural that is so prolific in days' works as fruit growing. In its various stages and departments are niches in which the child of seven or the man of seventy may be perfectly fitted. In fact, it is the one occupation wherein a big family may be made to pay its way and at the same time be instilling into the child mind a sense of business. In most cases the parents pay so much per row for weeding, so much per crate for picking, and so much per day for other work.

Thus it will be seen that the money remains within one's own family. The children are taught to practice economy in expenditure, buying just such things as each really needs, and at the same time teaching them those practical lessons that all human life needs in its business, namely, thrift.

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Orcharding in the Northwest.

EDSON GAYLORD, NORA SPRINGS, IA.

If our experts have been doing their best to originate a better apple than we have had in the Wealthy all these years, is it not high time we call a halt, at least long enough to see where we are at and to look more to what a few of our oldest orchardists have been bringing out, especially since 1855. We have now two hundred varieties, nearly all in good condition, but I am told I have these mostly top-worked on hardy stock. This is true, while on the other hand my site is now well known to be one of the worst in the northwest. A great part of my original site would go as low as six on a scale of one to seven. I have abandoned five and six. The remainder I now occupy is no better than number four. I admit I have gained much by grafting on hardy stock, but I am sure there are many locations one could successfully grow nearly or quite all I now have on my grounds if they were grown on hardy roots.

I am well convinced there are three very important requisites to succeed in orcharding in the northwest. Each requisite counts as near half as might be. A friend of ours got cast away on some South Sea island. Two of the natives there beset him to go into raising hogs there in the woods. The leader says when we get them ready for market we will divide up and each one of us will have half. On this plan I deem location is fully one-half and the other half consists in properly setting, trimming and training. High ground slightly sloping north is best, southwest is worst. Nearly everything killed in my location in fifty-five. Wolf River and Wealthy all killed on their own stems. Wealthy on crab roots and Wolf River on Duchess and Chicasaw crabs came out sound. A Northwestern Greening came through some discolored but top-worked on Transcendent did not lose a bud. A kind word for this stock for the Northwestern Greening. I have five trees of the Northwestern Greening set soon after top-worked on other stock that up to date they all have not given me one-tenth the apples that this one graft on this Transcendent has.

As to the importance of setting and training a tree very much depends on the location it is to occupy. If one has no other location than a close, shut up southern slope you must resort to severe measures. Set your trees seven to fourteen inches deeper than grown in nursery. Give the trunk a fair lean to the one-o'clock sun. Be sure to get the strongest branches on the sun side, and, what is more,

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after your tree is set take a sharp knife, go over your trees and cut off all branches that show signs of growing off to the northeast. This will force the sap to go into the limbs on the sun side. Do this till the tree begins to bear. From then on they will need very little trimming or training.

I can only refer to a few kinds that have been thoroughly tested on my grounds and on grounds near me. Every kind I consider far more desirable than any brought out by hand-pollenizing during the last forty years. The old, well known Fall Orange came through fifty-five, was bearing before and has kept on bearing ever since. It bears heavy crops every other year. The quality of the apple is scarcely excelled even by Grimes Golden. Keeps some better than the Wealthy, I think, the tree a shade more hardy than Grimes Golden. They appear to be twin brothers.

My next is the well known standard winter apple in the country about the city of Washington, D. C. It came through fifty-five here on a third rate site. This tree was top-worked on a Minnesota crab twenty-six years ago. The only possible objection I have to it is it bears a full crop only every other year.

We have another perfect in every way. We call this Lord Dunsmore. I got this from scions sent to Connecticut from Ireland some years ago. We have but one bearing tree here now but expect a number to bear this coming season. It has borne six successive full crops, keeps well into winter, think till May, large size, quality close to the best. This tree is a strong grower. If its color was red, it would be a close rival to the Baltimore.

Then I have tested another kind that when mixed one can hardly separate them. The principal difference comes from the fact that its quality is unsurpassed by anything but the Palbermer, grown only in the Virginias. It has borne on my grounds six successive crops; has been growing some twelve years here. I am unable to tell where I got the scions. I will only add, if it was red as my Brilliant, I would not exchange it for all yet seen or heard of east or west.

I have two other kinds that might be called true seedlings that came up in an old orchard that was located before the United States was thought of. I have had some five crops of each. One I call the Brilliant, that I no doubt used to eat apples from seventy-seven years ago. This was where all us boys used to go to get the best apples and pears grown in New England. Fruit is large, brilliant red and unsurpassed for a dessert apple. Bears well and keeps till November, hangs well.

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My next is what I call my improved Baldwin, which it resembles very much in every respect except quality. All agree its quality is superior to the old Baldwin. It is supposed to be a seedling of the Baldwin and the White Winter Spitzenburg. It will keep till May and June. It bears full every year and hangs well to the tree. I have all confidence it will be the coming winter apple for the northwest.

A special word to my Minnesota brothers. Are you not too much like the ancient Welch people were many years ago when the English were trying to force on them an English ruler? The Welch made serious objections to this but agreed to accept any one that was born in Wales and could not speak a word of English. It happened at that time the English king had a son who had just been born in Wales, and the English king at once presented them this son, which the Welch have ever accepted as their king or prince. Now, I ask, are you not too exacting for your own good when you put so much stress on having an apple born in Minnesota. If you ever get such by hook or crook you will only have an apple whose origin can readily be traced to some other country. Is it not a well known fact that the roots we have had for our fruit trees have been grown from seed grown in sunny France or from the noted apple growing state of Vermont? Not from trees on their cold hills but grown along the lake shore where they make a business of growing all such varieties for commercial purposes as the Northern Spy, the Rhode Island Greening and, in short, all kinds grown in the middle or eastern states. I am anxious to be right, and if wrong am more than anxious to be set right, and if any one sees where I have misstated or misrepresented any fact, I ask them to criticize such. I deem one of the most important drawbacks one has, is the lack of criticism. There are very few writers that do not now and then make some mistake. It is not very often that one mistake does more harm than a long array of good things does good. To those not knowing me I will simply say I set the first apple tree in northern Iowa; never sold an apple tree or set one excepting to sell its fruit, but have been all these fifty-five years searching for that best apple.

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Seedling Fruits in Manitoba.

PROF. SAMUEL B. GREEN.

Mr. D. W. Buchanan, of St. Charles, Manitoba, has for a number of years been experimenting with seedling fruits and has several times received from us seedlings of various kinds. A recent letter from him contained the following, which will be of interest to plant-breeders:

"You may be interested in learning of results from seedling stock we had from you heretofore.

"One thousand seedling plums, spring 1903. Many were root-killed the first winter. Those that survived the first winter have mostly lived to fruit, but none have proved of special value, being too late for this region except in an unusually favorable year.

"Fifty Aitkin plum seedlings have all survived and nearly all fruited. None resemble the Aitkin. They range from medium to large, and are all much later than Aitkin. Too late for general use here. Some of fair quality and would be of some value if earlier.

"One thousand apples and 500 hybrid seedlings. Three or four of the apples have fruited. One resembles an undersized Duchess and is very early, ripening here in August. The others are small late seedlings. About forty or fifty of the hybrids have fruited, and a few are equal in quality and size to the average fruits of this class. Three or four have been selected for further experiment.

"The Beta grape ripened with us this year, but the season was very favorable, many plums ripening that do not ripen in an average season.

"The seedling apples showed greater hardiness than we expected, but were badly decimated the winter following the very short summer we had a couple of years ago. But for that bad summer, most of the trees would have been in good shape now. They were allowed to branch low, almost from the ground, and given little pruning but clean cultivation all summer."

Wood Preservation.—The United States government considers the investigations of the preservative treatment of timber of such importance that the business of one office of the United States Forest Service, that of Wood Preservation, with new quarters at Madison, Wis., is given over entirely to the work of experiments in co-operation with railroad companies and other corporations and individuals in prolonging the life of railroad ties, mine props, bridge timbers, fence posts and transmission poles.

The lengthening of the life of timber means the saving of thousands of dollars annually through doing away with the heavy expense of labor and cost of material for renewals.

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SECRETARY'S CORNER

ANNUAL MEETING, AMERICAN ASSOCIATION OF NURSERYMEN—Much is promised of interest in connection with this annual meeting of the nurserymen of America, to be held at Denver June 8-10. Free entertainments of various kinds and sight seeing trips upon mountain railroads are promised by the entertainment committee. Those planning to attend should address at an early date John Hall, Sec'y., Rochester, N. Y., for rates, etc.

ANNUAL MEMBERSHIP FOR 1910.—The annual membership for the current year, including March 25th, is 2460, which is practically the same as the membership at the same date in 1909. Are there those in your vicinity, dear fellow member, whom you are hoping to secure for our membership roll? We are ambitious to exceed last year's total, and this much desired end will be brought about with the usual amount of assistance from our membership.

APPLICATIONS FOR APPLE SEED.—There have been so far this season eighty-three applications for apple seed, to be planted, it is understood, in connection with the apple seedling contest. A number of these have ordered more than one package of seed. There is still a considerable quantity of this seed at hand, and orders placed early in the month can probably be filled promptly. Address as heretofore, Secretary Latham, remitting ten cents for a package of fifty Wealthy seeds.

NEW LIFE MEMBERS.—An unusually large number of names have been added to the life membership roll since the last annual meeting. These are twenty-six in number. Six of these are honorary members created by the society at the last annual meeting; the other twenty have paid membership fees in the regular way. The list of names of these additions to our roll is as follows:

F. G' Trefethren, Spring Valley, N. D; E. A. Webb, St. Paul; Max Pfaender, New Ulm; I. W. Pond, Madelia; A. Brackett, Excelsior; R. M. Probstfield, Moorhead; O. W. Moore, Spring Valley; S. M. Owen, Minneapolis; Chas. M. Loring, Minneapolis; Thos. Redpath, Wayzata; Mrs. E. E. Lundgren, St. Paul; And. A. Haatvedt, Kensington; Rev. Clement Klingel, St. Anthony. Ind.; A. M. Shellum, Hanska; H. L. Melgaard, Argyle; Albert Miller, Cannon Falls; John Cheney, Morton; H. J. Blain, Maple Plain; A. N. Arneson, Wegdahl; R. H. Benham, Minneapolis; John L. Yost, Murdock; J. W. Lowe, Fairmont; A. M. Sayre, Hills; T. S. Slingerland, Kasson; J. L. Ludescher, Rockford; F. A. Onstine, Harmony.

Members are urged to become acquainted with these new life members in their localities and give them the warm hand of fraternal friendship in the interest of the society.

NOTES FROM FRUIT-BREEDING FARM.—At the fruit-breeding farm the work of crossing began in the greenhouse about the first of February. Mr. Haralson has now in the greenhouse several hundred pots of strawberries which have set fruit in good shape, all the result of hand-made crosses. Each of these is carefully recorded in a book, making altogether some fifteen hundred combinations. Crossing work has also been carried on with Americana and Japanese varieties of plums, and the sand cherry, and even the peach and apricot have been worked into some of the combinations. Crosses have also been made with some of our best varieties of cultivated raspberries and selected wild kinds. The plants look well. As a result of this work, we have, besides the strawberries, which are bearing heavily, several trees that are well loaded with Americana plums, Japanese plums, sand cherries, large sweet cherries, apricots and peaches. This greenhouse is in reality a laboratory for this kind of work, which can be undertaken much better under cover than outside, since all the conditions can then be controlled. It is expected that the greenhouse, now 20x50 feet, will be doubled in size for next year, as the space is needed for the crossing work. A visit to this greenhouse at this time of the year is full of interest.—Samuel B. Green, Horticulturist.

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A ROW OF DUCHESS APPLE TREES AT PINE CITY, WITH ITS OWNER, GUST P. NORTON. (EIGHTH CONG. DISTRICT.)

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THE MINNESOTA HORTICULTURIST

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Vice-President's Report, 1909, First Cong. District.

J. A. HOWARD, HAMMOND.

In response to circulars sent out I received reports from every county in the district, and the following is a summary of these reports:

Apples with one or two exceptions were a good crop. In Winona and Houston counties, the drouth nearly ruined their crops. Very little blight is reported in any part of the district.

Plums were almost a failure in the whole district, with the exception of Wabasha county. My own plum orchard, fertilized with fifty swarms of bees, bore a full crop with the exception of Cheney and Japanese hybrids.

Cherries with exception of Compass and Prof. Hansen's new varieties were almost a failure.

Grapes, a very light crop reported.

Blackberries, a fair crop but in most localities cut short by dry weather.

Raspberries, a fair crop but in some localities injured by drouth.

Strawberries on old beds were a fair crop, but new beds did not show up well unless well protected and were about half a crop.

There has been more nursery stock planted this spring than usual, and more commercial orchards. One of my neighbors planted 2,500 trees, two more 500 each, and a great many more one to three hundred —and with better results than usual.

Field mice did more damage last winter in this county (Wabasha) than ever before.

Very little blight is reported, the least in my orchard that I ever saw.

About the usual amount of spraying is being done and, where done well, with good results.

No damage worth mentioning is reported from winter-killing last winter. Trees are in good condition now, with plenty of moisture in the ground.

Apples: Best varieties of apples reported from different localities: Wealthy, Patten's Greening, Duchess, Okabena, Malinda, Longfield, Hibernal, Wolf River, N. W. Greening.

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Two or three reported some of the tender varieties as doing well top-worked.

Patten's Greening in orchard of J. A. Howard.

Plums: Terry, Surprise, Wolf, Wyant, Hawkeye. Terry is the best plum I have. Top-worked on Aitkin, it has borne two heavy crops.

Cherries: Compass, Homer.

Grapes: Beta, Moore's Early, Worden.

Blackberries: Ancient Briton, Snyder, Stone's Hardy.

Raspberries: Red—King, Turner. Black — Gregg, Older.

Currants: Red Dutch, Long Bunch Holland.

Strawberries: Bederwood, Sen. Dunlap, Crescent, Haverland.

Perennial Flowers: Peonies, Phlox, German Iris, Golden Glow, Bleeding Heart.

Ornamental Shrubs: Snowball, Hydrangea, Spirea.

In closing this report I will say there were fourteen carloads of apples shipped from our station, Hammond, this season, besides a number of hundred barrels shipped by local freight.

Vice-President's Report, Second Cong. District.

G. D. MC KISSON, FAIRMONT.

I sent out the twenty-six circular letters furnished me by our secretary to members of the society in the Second Congressional District. From reports received I will endeavor to make my annual report.

Apples: Good crop, no blight to speak of. Trees going into winter in good condition with plenty of moisture. Planting has been liberal with good results. Varieties named for planting: Duchess, Iowa Beauty, Wealthy, Okabena, Peter, Longfield, Patten's Greening, Hibernal, Malinda, N. W. Greening, Anisim, Peerless.

Crab Apples: Whitney, Early Strawberry, Transcendent.

Plums: Poor crop, trees looking good, and the following varieties named for planting: Wolf, Surprise, De Soto, Cheney, Wyant, Aitkin

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Cherries: No crop except Compass. Compass and Homer named for planting.

Grapes: Fair crop. Varieties doing well here, medium early, Concord, Worden, Beta.

Blackberries: Good crop where properly handled. Snyder and Ancient Briton are best for planting.

Raspberries: Good crop. King, Minnetonka Ironclad and Sunbeam reported doing well.

Strawberries: Good crop. One party reports plants killed by a heavy sleet covering plants with ice. Dunlap has done the best here for commercial planting. Warfield, Enhance, Lovett and Clyde are also named for planting.

Currants: Fair crop. White Grape, Long Bunch Holland, Victoria and Pomona have done best.

Gooseberries: Fair crop. Downing and Houghton are the only kinds planted to speak of.

Hardy perennial flowers that do well here are Peonies, Phlox, Iris and Yucca Filamentosa.

Ornamental Shrubs: Syringa, Hydrangea P. G., Spirea V. H., Weigelia, Lilacs.

Vice-President's Report, Third Cong. Dist.

C. E. SWANSON, CANNON FALLS.

The twenty-five circulars received from our secretary were mailed to members in different sections of this district, and eleven answers were received. This report is based on the information thus obtained and from observations made in my own neighborhood.

Question. What is the present condition of the following fruits in your vicinity and the kind of crop borne this year (1909) by each?

Apples: J. F. Benjamin, Hutchinson: An average crop, which ripened and is keeping well, and trees look healthy. Very little blight excepting on some old Transcendents.

A. H. Reed, Glencoe: Condition good. Good crop. Never better.

F. W. Briard, Gaylord: Big crop and in fine condition.

J. E. Holt, Carver: A fair crop. Fruit nice and healthy.

W. S. Van de Bogart, Zumbrota: Very good condition and fruited well. No fire blight.

F. H. Thomforde, Goodhue: Condition fair with average crop.

H. Schneider, St. Peter: Apples very scarce. N. W. Greening twig-blighted in the spring. Apples dropped off when about the size of peas.

D. Follette, Hastings: A good average crop. Trees in good condition.

O. Oredalen, Kenyon: Trees apparently in good condition and crop generally good.

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C. H. Andrews, Faribault: Good crop of standard varieties, apples and crabs. Patten's Greening, Hibernal, Anisim, Duchess, Wealthy and Longfield full crop.

Wm. Tanner, Cannon Falls: Crop good and trees in good condition.

In this locality the trees came through the winter in fine condition, and nearly all trees of bearing size were well loaded with fruit of fair size and good quality. Except from the curculio, trees and fruits were less bothered by insects and fungous disease than for some years past.

Plums: J. F. Benjamin, Hutchinson: Short crop. No plum pocket. Trees made a good growth.

A. H. Reed, Glencoe: Below medium crop. But few native plums. The Wolf and Compass Cherry bore fairly well.

F. W. Briard, Gaylord: No plums. The trees were covered with blossoms but did not bear.

J. E. Holt, Carver: Hardly any crop to amount to anything.

W. S. Van de Bogart, Zumbrota: Made a good growth and bore a good crop, where spraying was practiced.

F. H. Thomforde, Goodhue: Not many trees planted and what fruit there was was poor.

H. Schneider, St. Peter: We haven't seen a plum for two years on account of blight and cold weather.

O. Oredalen, Kenyon: Trees in good condition, but bore no fruit.

C. H. Andrews, Faribault: Light crop, but where well fertilized by bees we got three or four times as many plums as for the past two years.

In our own orchard Forest Garden and Cheney bore a good crop. De Soto were overloaded, causing the fruit to be small and of poor quality. Surprise bore a small crop of good quality. The Wolf (freestone) bloomed freely but set very little fruit. So far this variety has failed to produce a fair crop here.

Cherries: Very few cherries of the Morello type are raised in this district. Compass seems to be doing well and bearing good crops. C. H. Andrews reports Prof. Hansen's new cherries, Sioux and Tomahawk, bearing heavily and fruit of good quality.

Grapes are reported from a light to a good crop. Not very many grapes are raised in this district.

H. Schneider, St. Peter, reports 250 market baskets from 680 vines, four years old. In our garden a few vines of the Beta, three years old, bore several bunches of good sized fruit, and so far this variety has proved to be hardy without winter protection.

Blackberries: Very few raised. Three report a good crop; one about half a crop; four, not many raised; and four, no answer.

Raspberries came through the winter in good condition, and have with few exceptions been a good crop all over the district.

A. H. Reed reports a short crop.

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Strawberries came through the winter in good condition, but owing to the drouth in 1908, some beds had a poor stand of plants. This season plants have made a good growth and prospects for a good crop next year (1910) are bright.

Varieties doing well are Sen. Dunlap, Warfield, Bederwood and Brandywine. Eight report crop as good and three as short.

Currants were a good crop.

Gooseberries, poor crop.

Question. Has there been much nursery stock planted in your neighborhood and with what results?

J. E. Holt, Carver: No, hardly any this year.

J. F. Benjamin, Hutchinson: Considerable with good results. Many large orchards put out last spring near here.

A. H. Reed, Glencoe: More apple trees set last spring than ever before in one season.

F. H. Thomforde, Goodhue: Quite a few apple trees were planted, and all made a good growth.

O. Oredalen, Kenyon: Yes, results fair.

D. Follette, Hastings: Large amount of apple trees were planted. Doing well. Mostly Wealthy and Greenings.

F. W. Briard, Gaylord: No.

H. Schneider, St. Peter: There hasn't been any planted in this locality this year.

Wm. Tanner, Cannon Falls: Not much.

W. S. Van de Bogart, Zumbrota: No great amount, but all doing well.

C. H. Andrews, Faribault: Usual quantity and has done well.

Trees suffered very little from blight this season.

Spraying is not practiced to any great extent, as yet, in this district.

Three report having sprayed. Eight report none or very little spraying done in their locality.

Mr. Benjamin reports N. W. Greening as killed last winter. All others report no damage done.

All report fruit trees and plants as going into the coming winter in good condition, with plenty of moisture in the soil.

The following varieties of fruits are reported as doing well in this district.

Apples: Wealthy, Okabena, Patten's Greening, Duchess, Hibernal, Longfield, Malinda, N. W. Greening, and nearly all the other varieties on the society's fruit list are mentioned by one or more correspondents.

Crabs: Whitney, Early Strawberry, Minnesota, Lyman's Prolific, Faribault and Sweet Russet.

Plums: De Soto, F. Garden, Wyant, Weaver, Wolf, Cheney and Surprise.

Cherries: Tokeya, Sioux, Tomahawk, Compass.

Strawberries: Sen. Dunlap, Warfield, Bederwood and Brandywine.

Raspberries: King, Loudon, Turner, Cuthbert, Older and Kansas.

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Blackberries: Snyder and An. Briton.
Gooseberries: Carrie, Downing and Houghton.
Currants: Perfection, Pomona and White Grape.
Grapes: Beta, Worden, Concord and Brighton.

Judging from reports not much attention is paid to flowers and hardy shrubs, as only four mention any varieties.

Perennial Flowers.: Peonies, Phlox, Golden Glow, Bleeding Heart, Achillea, the Pearl, Columbine, Japanese and German Iris, Larkspur and Hardy Pinks.

Hardy Shrubs: Spirea Van Houttii, A. Waterer, Snowball, Mock Orange, Honeysuckle, Hydrangea, Lilacs, Flowering Almond, Flowering Currant and Hardy Roses.

Vice-President's Report, 1909, Fourth Cong. District.

F. H. GIBBS, ST. ANTHONY PARK.

In getting information for the report of the Fourth Congressional District, twenty-five letters were mailed by me to persons in different parts of the district who were known to be horticulturists. Each letter contained a stamped envelope together with a blank and a request to reply. Fifteen were mailed to persons belonging to this society and ten to fruit growers, not members. Only five answers were received from members, and six from fruit growers not members.

The summary by counties is as follows:

Ramsey County.

Apples: Crop good. Trees made a good growth and are in fine condition.
Plums: Variable, but generally poor.
Cherries: Total failure.
Grapes: Fair.
Blackberries: Acreage small but condition good.
Raspberries: Crop good. Condition good.
Strawberries: Crop fair. Condition good.

More nursery stock was planted the last season than ever before.

Very little blight. Not much spraying has been done, but good results have always followed where tried. Plenty of moisture, and fruits appear to be in healthy condition.

The following fruits appear to be favorites in Ramsey county:
Apples: Duchess, Wealthy, Okabena, Hibernal, Patten's Greening.
Crabs: Florence, Whitney, Early Strawberry.
Plums: De Soto, Forest Garden, Surprise.
Currants: Pomona, Prince Albert, London Market.
Raspberries: King, Loudon, Minnetonka Ironclad.
Strawberries: Sen. Dunlap, Splendid, Semple, Bederwood, Warfield.
Gooseberries: Pearl, Josselyn.

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Blackberries: Snyder.

CHISAGO COUNTY.

Apples: Exceptionally good crop.
Plums: Very good.
Cherries: Very light crop.
Grapes: Very good crop.
Blackberries: Good.
Strawberries: Excellent.

More nursery stock planted than ever before.

Very little blight. No spraying reported. Some loss from winter-killing on sandy soil. Plenty of moisture in the ground the coming winter.

Mr. F. H. Gibbs seeding his six acre onion field.

General standards are favorites. Milwaukee gaining friends. Peerless and Charlamoff bore well this year.

Fruit of all kinds going into winter in good condition with plenty of moisture in the soil.

The following varieties of fruit are reported favorably:

Apples: Duchess, Wealthy, Patten's Greening.
Crabs: Virginia.
Plums: De Soto.

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Strawberries: Senator Dunlap, Brandywine, Haverland, Bederwood.
Currants: London Market.
Blackberries: Snyder.
Gooseberry: Carrie.

WASHINGTON COUNTY.

Apples: Good crop. Trees in good condition.
Plums: De Soto bore good crop; other varieties no crop.
Cherries: None.
Grapes: Very few raised.
Blackberries: Very good crop.
Raspberries: Crop fair.
Gooseberries: Especially Carrie, excellent crop.

Not as much nursery stock planted as usual but what was planted has done well.

No blight reported. No spraying reported. Stock of all kinds came through the winter nicely.

More interest is being taken in this district each year to beautify the home grounds by planting trees, shrubs, perennials, etc.

Vice-President's Report, 1909, Fifth Cong. District.

E. B. MILLER, BLOOMINGTON.

I sent out the twenty-five circulars furnished by the secretary and received replies to fourteen only. Why is it that *all* to whom these are sent do not send answers? It costs nothing but a few moments of time. Is it that they lack interest in the work? I hope not. There is much work in compiling a report from these, as they represent a wide range of territory, with a variety of soils and persons. Some whole-hearted and earnest in the work, while others are only lukewarm or ice-cold. However, we are very thankful to all who have sent in answers, and the following report is based on these replies, in many cases very complete and explicit.

Apples: From nearly all sections the crop of apples averages a good one. Fruit mostly of a fine quality, and prices were good all the time for good fruit, and at the last of the season better than for several years past. Present condition of trees is good.

Plums: Only a few orchards bore at all, and while some localities report good fruit; others tell of rot, pockets, etc., in fact anything but satisfactory results. The outlook for plums, as a money crop, is not at all a bright one.

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Grapes: Grown by only a few. Some report good yields, others none.

Cherries: Very few trees planted, and these not profitable, except the Compass Cherry, and this frequently rots on the tree

Blackberries: Where grown these proved a good yield generally and fruit of good quality.

Raspberries: In nearly all reports the yield is fair and quality good with fair prices.

Strawberries: Now you have us in our true element. Our soil seems to be about right for this favorite berry, and it is grown more than any other. Although the yield was not *immense*, vet it was paying in the end, as choice fruit brought remunerative prices.

Mr. E. B. Miller, Bloomington.

Currants and gooseberries are grown to some extent but were not much of a yield the past season.

The "Carrie" seems good but is not planted much as yet as, like all new fruits, the price of plants is too high for the average grower.

As to the planting of nursery stock the past year will say that in some sections much was done, while in most parts little or none was planted. It proved a fairly good year for setting out trees, and where the proper attention was given to the preparation of the ground and the after care, success has followed. The orchards were remarkably free from blight, and spraying is done by some, and in most years will have to be done by all or *no fruit* or fruit of an inferior quality will result.

Nearly all trees wintered well and are going into the present winter in good shape, having ripened their wood well, and the leaves hung on till all seemed ready by nature to shed. Plenty of moisture. Early snow has formed a good cover or mulch for this winter.

As to the varieties of various fruits in our locality would name:

Apples: Wealthy, Duchess, Okabena, the Greenings, Hibernal, Peerless.

Crabs: Whitney No. 20, Estelline, Early Strawberry.

Plums: Surprise, De Soto, Hawkeye, Rollingstone, Cheney.

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Strawberries: Warfield, Sen. Dunlap, Splendid, Bederwood, Brandywine, with a few still growing Countess and Crescent.

Raspberries: King, Ironclad, Cuthbert, Miller's Red, Loudon.

Raspberries—black: Gregg.

Blackberries: Snyder, Eldorado, Ancient Briton.

Currants: Long Bunch Holland, Fay's Prolific, Perfection, Red Cross and others.

Gooseberries: Houghton, Smith's Improved, Downing, Carrie.

Grapes: Concord, Moore's Early, Beta, Delaware, Brighton, with others in different situations.

A number of our members in various parts of our district grow flowers, both tender and hardy. Among the latter, peonies in variety, phloxes, lilies, irises, poppies, hollyhocks, platycodon, aster, digitalis. delphiniums, hibiscus, campanula, daisies, sweet williams, and numbers of others.

In shrubs we find: flowering almonds, berberry, thunbergia, cornus, elders, syringas, snowballs, hydrangeas, spirea, with a large number of roses, etc.

But let no one deceive himself into thinking that these fruits, plants or flowers will do anywhere near their best unless the soil is put in the right kind of condition and plants properly set, followed by constant and vigilant cultivation, first, last and all the time. *This means success.* And this is the motto of our society. Long may it live and prosper.

Vice-President's Report, 1909, Sixth Cong. District.

FRANK BROWN, PAYNESVILLE.

In making this report I find myself thrown too much upon my own resources for material to report upon, for to the twenty-five circulars sent out *all* but *sixteen* responded. To the nine faithful ones I return my sincere thanks; to the sixteen I would say that a good report depends not entirely on the vice-president but upon the hearty co-operation of others.

The *apple* crop was good. The lowest report gave the crop at 75 per cent in the southwestern part of the district. In this immediate vicinity the crop was the heaviest ever known. I do not think one-half better than ever before would be too high an estimate.

The condition of the trees is all that could be desired, as the wood ripened up nicely and there is plenty of moisture in the ground.

Plums were in some places good, in others poor, and a few report an entire failure. In my opinion much of success and failure is due

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to variety. Here on our own grounds some varieties bore heavily in the nursery rows, and with no special care except thorough cultivation and no spraying.

One man reports curculio as the cause of failure. Others speak of a leaf louse injuring the trees, which of course could have been prevented by spraying. As far as plum trees have come under my own observation they are now in prime condition.

Cherries: Not many are grown in this district. The Compass cherry seems to be the favorite, with the Homer a good second. Here on our home grounds both the Compass and Homer grow well and bear well. The trees are in best condition possible for the future.

Grapes where planted and cared for properly were a good crop. When people fully realize that grapes will grow and ripen if given proper care, we shall have a fuller report on this most excellent fruit. Here at my own home the Concord bore a crop that was all that one could wish; the Beta bore for the first time; it is a good and hardy variety.

Blackberries were a splendid crop where planted. Not enough attention is paid to this fruit; it is a heavy yielder and a good seller.

Red Raspberries were a good crop over the entire district. Perhaps more of this fruit is grown than any other in this part of the state, but existing methods can and undoubtedly will be much improved upon. The canes are in good condition, the wood being fully ripened.

Strawberries were a splendid crop. Better methods are beginning to tell with this fruit, and we look for greater results in the future. The plants are starting into winter in the best possible condition.

Currants, gooseberries, high bush cranberries, buffalo berries and sand cherries are also grown, and the crop in nearly all cases was all that could be desired.

Currant worms did some damage in a few isolated places, but it is small trouble to grow a crop if remedies are applied in time.

Nursery stock seems to have been planted quite extensively in most localities, and the results were generally good. The lack of confidence in nurserymen, owing to unscrupulous agents, and the indifferent manner of planting and caring for on the part of the people, are doing more to hinder planting than all other causes combined.

Blight. Very little is reported for the past year. Cutting and burning affected parts are the only remedies used so far.

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Spraying. Very little is being done so far, although nearly all seem to realize the importance of so doing. It surely is a matter that must be attended to in the near future if we are to have success with our fruit.

Fruit trees suffered very little from last winter's weather, except perhaps some very young trees, or perhaps some few that were not very strong. But rabbits did much damage, more than was ever known in this section of the state before. Fruits are going into the coming winter in first class condition; there is plenty of moisture in the soil.

The preferences for fruit in this district seem to be:

Apples: Duchess, Patten's Greening, Wealthy, Hibernal, Okabena, and some others doing equally as well.

Fruits from Mr. Arrowood's garden—in Nevis, Hubbard County, 6th Cong. Dist.

Plums: De Soto, Surprise. Other varieties are grown.
Cherries: Compass, Homer, Sand Cherries.
Raspberries: Loudon, King, Columbia.
Strawberries: Senator Dunlap, Splendid, Bederwood.
Hardy Perennial Flowers: Peony, iris, perennial phlox.
Ornamental Shrubs: Spirea Van Houttii, snowball, bush honeysuckle, hydrangea, syringa, lilac.

It is becoming a settled fact to the people of the Sixth Congressional District that we can grow nearly anything in the line of fruit and flowers that will grow in any part of the state. The great question is: Will we give such things the proper care? An all wise Creator has planned for sunshine and moisture, and the only question is, will we do our part? If we do this part of our state will be a place of contentment and happiness, and our children will call us blessed.

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Vice-President's Report, 1909, Seventh Cong. District.

SWAN J. WALGREN, WILLMAR.

Of the twenty-five circular inquiries received by me and sent by me to horticulturists of my district I received replies from twenty.

Apples: All of them reported that apples were good this year and of good quality, but the general size of the fruit was smaller than usual. All kinds of apple trees bore good crops this year with the exception of Martha crab.

Plums: Two report poor crops, and fourteen failure.

Cherry: Two report Compass cherries good.

A Transcendent apple tree, forty years old, at S. J. Walgren's, Willmar.

Grapes: Four report a good crop, and three, fair crop; seven, none planted.

Raspberries: Ten report good crops, two, poor crop. King and Ironclad are the best varieties.

Blackberries: Three report good crop; one, poor crop; and twelve, none planted.

Strawberries: Sixteen report good crop and good quality, with large berries.

New Trees: Nine report a good many trees set out, and three, a small number.

Currants and Gooseberries: Reported as fair crops.

Blight: Thirteen report no blight, and three, very little.

Spraying: Three report having sprayed, ten have not, and three did not need it.

Injury by Winter: Three report no injury, and ten, nothing to speak of.

Condition: Fruit trees are reported to be in good condition for winter. There is plenty of moisture and a good snowfall the 15th of November.

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Apples: The best varieties are reported to be Wealthy, Duchess, Hibernal, Patten's Greening, Peerless, Okabena, Longfield.

In regard to *crabs,* Transcendent, Whitney No. 20, Lyman Prolific are reported to be the best.

Perennial Flowers: The following varieties are mentioned: phlox, peonies, columbine, rudbeckia, bleeding heart, hollyhock.

Hardy Ornamental Shrubs: The following varieties are reported as doing well: snowballs, lilacs, mock orange, highbush cranberry, hydrangea, barberry, dogwood, golden elder, spirea Van Houttii, honeysuckles. Any kind of the last variety grows well.

The writer has made a practice of spraying three or four times during the season with bordeaux mixture, 5 to 6, with two ounces

S. J. Walgren and family in his orchard at Willmar.

of paris green to fifty gallons of water, the first time when the buds begin to swell, the second time when the blossoms fall and the last time ten or twelve days afterwards, and on the small trees in August if needed. I have sprayed in this way for three years and find that it keeps the trees in good, healthy condition, the foliage and fruit clean from all affection from scab. As an experiment I did not spray some of the apple trees of the Virginia and Patten's Greening variety, and I noticed that on those the apples were affected and the leaves spotted.

I also sprayed currants and gooseberries and annual plants and roses and find that it keeps them clean from insects. I spray quite liberally, so that the solution runs from the plants, and I find that it does not injure them. I had a good crop of raspberries, the varieties

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being King, Loudon, Minnetonka Ironclad, Cuthbert, but some of them are not hardy enough to withstand winter without properly covering, to make sure of a crop. I have a number of Prof. Hansen's Sunbeam raspberries. I did not cover them last winter, but I still had a fine crop with large, fine berries. The stems did not grow long but were heavy and strong. I am leaving them without protection this winter, and if they prove hardy I will conclude that it is the only raspberry of those that I have tried that we ought to raise in Kandiyohi county.

I have Prof. Hansen's No. 1 strawberry and leave them without covering, but they are too small in size, so I do not like them on that account. I have thirty-two kinds of Prof. Hansen's plum seedlings, which were planted in 1908. Two of them were winter-killed but came up from the stump. Two of them bore fruit, but none remained on the trees until they were ripe, so I cannot make any report in regard to the same. The trees made a growth of from three to four feet this year, but I have observed that all kinds of trees made a large growth this year, probably twice the ordinary growth. The followings are the names of Prof. Hansen's hybrid plums: Neolatanka, Wastesa, Tokeya, Enopa Seedless, Zekanta, Uakapa, Tapa, Skuya, Eaganee, Okiya, Sapa, Hanska, Yuteca, Assinaboia, Winnipeg.

During the last few years the people of Kandiyohi county have seen such fine exhibits raised in the county at the Willmar street fair that they have become quite interested in fruit raising. We notice that most of the new beginners plant altogether too many early varieties and fail to plant such trees as will bear good keeping apples. When ordering apple trees they are attracted by the fine pictures of the early varieties in the sample books of the agents and do not stop to think whether the varieties they plant are such as will keep or be fit for the market. My advice for laying out an orchard would be that 80 per cent of the apple trees should be of the Wealthy or Patten's Greenings. The Northwestern Greenings are proving not to be hardy. The Transcendent crab is the best for the market and also for home uses. I have some Transcendent crab trees that are forty years old and bore from ten to twelve bushels this year. I was able to market the Transcendent crabs at $1.25 per bushel, while the Early Strawberries and Virginia did not command more than 60 to 75 cents.

There are a great many other things I would like to mention, but I am afraid the report will be too lengthy. Ten years ago there were but seven members of the society from Kandiyohi county; now we have a local society with forty-nine members, and there are over 3,000 members in the state society.

In closing I wish to say that if all who are interested in horticulture will go to the winter meeting, they will learn more in the four days than they can by experimenting during their whole life.

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Vice-President's Report, 1909, Eighth Cong. District.

H. G. GROAT, ANOKA.

The eighth congressional district extends from city limits of Minneapolis to the northwest extremity of the state, nearly three hundred miles. Of the twenty-five blanks sent out I was pleased to receive answers to eighteen of them.

Apples: Most of the apple trees in this district are young, not many bearing fruit yet; nearly all report trees in healthy growing condition and good crop of fruit.

Plums: Trees in good condition but a very light crop of fruit on account of unfavorable weather while in bloom.

H. J. Groat, Anoka.

Cherries: None grown except Compass, and they gave good crop.

Grapes: Did not ripen well in most localities; two report the Beta doing well.

Blackberries: Not grown much; good to fair crop reported.

Raspberries: Fair crop.

Strawberries: Light crop; too dry at ripening time.

Gooseberries and Currants: Good crop reported from nearly all over district; was a poor crop in southern portion.

Considerable nursery stock, more than usual, put out; all but one report the same as doing well where given proper care.

Blight: There is not much blight, and not much of anything done to combat it.

Very little spraying done; one reports spraying early in spring for plum pocket with copper-sulphate successfully.

Trees held their leaves late last fall, and some trees and shrubs suffered; soil was dry.

All fruits are going into winter in good condition this fall, plenty of moisture in the soil and wood well ripened up.

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FRUIT LIST.

There is such a difference in soil that it is hard to give a list for the whole district.

Apples: Wealthy, Duchess, Patten's Greening, Hibernal and Okabena.

Crabs: Florence, Transcendent and Whitney are in the lead.

Grapes: Moore's Early, Beta and Concord.

Raspberries: Red. King, Miller and Cuthbert.

Blackberries: Nemaha and Gregg.

Strawberries: Dunlap, Warfield and Bederwood are in the lead.

Patten's Greening at Otto Wasserzieher's place, at Bay Lake, Crow Wing County, (Eighth Cong. Dist.)

There are many parts of this district that are sparsely settled and fruit growing is in its infancy. As it becomes settled the people are waking up to the fact that we can grow all the hardy fruits that are recommended by our society. There are many natural cranberry bogs in this district, and many more could be made a paying investment; all they lack is sand, and we have plenty of that.

All, or nearly all, report a light crop of strawberries, too dry at ripening time. I think the fault was, too dry last fall. The fruit buds

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did not develop fully, and the root system was so poor they could not resist the extremes of our winter and develop a good crop.

Strawberries will do better near water than any other of our fruit plants. I am located near a large marsh, and I try to put out my strawberries so they will be from eighteen inches to three feet above the level of the water in marsh. I have a sandy, porous subsoil that water will pass through freely. Apply about twenty loads of good manure and four barrels of air-slaked lime per acre and you will have a strawberry bed that will give you berries and lots of them. When berries on the upland are suffering from dry weather locations like mine are provided naturally with a cheap form of subirrigation which will give good results with the right varieties. With me Dunlap and Warfield are the best for moist soils; Clyde, Crescent, Bederwood and some others don't do well, and it's best to plant them on a little higher ground. It is hard to get more than one crop from such land, as it is natural grass land and hard to keep clear of grass and weeds after one year's fruiting.

I have grown strawberries on such locations for eight years and have had excellent crops and at least a fair crop every year but one, when a hail storm destroyed what looked like a fine crop. The only drawback is, I can't control the water in the marsh, and an unusually wet season has on two occasions drowned out part of my fields. One night we got a four-inch rain, which raised the water in marsh over a foot. You can imagine my delight next morning when I visited my field to see strawberry blossoms floating on top of water like miniature pond lilies—but that is one of the tragedies of horticulture.

CULL APPLES can be made to add considerably to the profits of the orchard by being converted into cider or into vinegar. The process is simple, and there is a good demand for a first-class article, especially among private customers.

SOME IMPORTANT FEATURES of the apple business are yet to be added before farmers can secure the full benefits that can be derived from raising and selling apples—organization and co-operation. As it is now, speculators come along and buy the orchards by the lump, frequently doubling on their investment. By organization, grading, inspecting and selling the fruit on its merits in markets that demand the best quality of fruit, the correct values can be secured to the producer.

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Vice-President's Report, 1909, Ninth Cong. District.

R. M. PROBSTFIELD, MOORHEAD.

I have sent out the twenty-five blanks furnished by the secretary and tried to scatter them proportionately through the counties of the Ninth Congressional District. It seems I have been very unfortunate in choosing my correspondents. Only ten were returned to me, the eleventh being my own individual report. I have therefore the more reason to thank those who responded. From the counties of Otter Tail, Becker, Red Lake, Marshall and Beltrami no response came. To judge from the information afforded me, it seems to appear that the counties of Clay, Norman and Polk are about the only counties in the district where considerable interest is taken in horticulture, which I cannot believe, for Otter Tail, Becker and counties to the north of them in the Ninth District present many better locations for fruits than the counties bordering on the Red River, by reason of diversity of soil, the many lakes, rolling lands and tracts of timber.

Question: What is the present condition of the following fruits in your vicinity and the kind of crop borne this year by each, viz.?

Apple: Polk, Norman and Clay counties' reports indicate that the crop was fair to very good. Those reporting give conditions as from fair to very good, a good thrifty growth having been made the past summer. Hibernal seems to stand at the head of the list in quantity raised and number of trees of any one kind. Next come Wealthy, Duchess and Patten's Greening for good yields. Next, Anisim, Tetofsky, Longfield, Yellow Transparent. Peter bore light crop. *Crabs*: Early Strawberry, Arctic, Virginia, Powers, Florence, Pride of Minneapolis bore well and some very heavily. Briar's Sweet, Orange and Dartt bore very light. Transcendent bore fair, heavy and light crop in different localities with much complaint of blight in places. Malinda reported by one to have been slightly injured last winter. Seems to be worthy of trial in limited number in this district.

Plums: The general report on plums is in the main unsatisfactory. No crop, very small crop; the best, half a crop reported by one only on Forest Garden; Cheney and De Soto seem to have the preference. Plums set well and heavily last spring but dropped before grown to the size of a small pea.

Cherries: Generally a total failure. Trees dying off early. One party reported trial of Wragg, Ostheim and Early Richmond. Early Richmond bore a few cherries, which the birds harvested before berries were ripe. Trees kept dying off and sprouting again to repeat the process. Compass cherry, the only success, but poor yield this year;

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think it is as much plum as cherry. Should like to see Homer tried. None reported in district.

Grapes: One reports fine, bearing, heavy crop every year. Another tried over twenty varieties; calls them a failure. Some bore nice grapes, but none ripened except a few bunches one year on Concord, Moore's Early, Agawam and Worden. Season too short, or our soil is not right for them. Had all to be covered in October to save them; did not ripen wood in time. Have Beta three years now, left it uncovered, froze back nearly to roots every year; cause, wood not ripe. Covered this fall.

R. M. Probstfield. Moorhead—one of our horticultural pioneers.

Blackberries: One reports fair crop, Ancient Briton and Snyder; one, none bore any fruit; one, tried them four years ago, never raised enough to pay for half of the work, unless the "fun" of covering or uncovering paid him. Need heavy covering of earth, which is easier than uncovering without bruising plants. Can probably be raised with proper care. Eight, no report.

Raspberries: Crop generally reported fair to very good, mostly fair. Varieties raised with success are in order named: Turner, Cuthbert, Minnetonka Ironclad, King, Hansel, Carolina, Older and Columbia. One reports badly winter-killed, no crop; and one, heavy crop.

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Strawberries: Nine reported. One, failure; four, fair yields; one, three-fourths crop; three, heavy crop. One thinks Dunlap best; has Dunlap, Bederwood and Warfield, also unnamed variety. Three report good crop.

Question. Has there been much nursery stock planted in your section this year and with what results?

Out of ten reporting, one don't know; six, much planted with fine results; one, only small quantities; one, not as much as in 1908; and one, only replanting missing or dead stock.

Question. Has there been much blight, and what has been done to combat it successfully?

Out of nine reports received on question, one, not enough to complain of; one had six Transcendents killed; one, crab apples blighted, nothing done for cure; one, "there has been but little blight;" one, by O. J. Hagen, of Hendrum, Minn.: "In my orchard not any, but blight has done much damage where orchards have not been properly taken care of to stop its ravages." (What is the remedy or preventive, Mr. Hagen? It would be important to all to know.) Three, no blight; one, have had much blight in 1908 and more this past season, mainly on Transcendents, also some on seedling trees. The only remedy I have applied is to cut off the dead limbs, or the whole tree, two to four inches below the healthy appearing wood. I do not consider this a remedy nor preventive, only a palliative. Trees making a very rank growth the last two seasons with plenty of moisture and hot weather may be the main cause.

Question. What is being done in the way of spraying orchards?

Nine report as follows: seven, no spraying; one, "know of but one in neighborhood beside myself"; one, "I think it is a failure."

Question. Did fruit trees or shrubs suffer any from cold last winter? If so, what varieties and what were soil conditions last fall? Did trees hold their leaves late in the season?

One, yes (to all three questions); one, raspberries and blackberries winter-killed where not protected; one, no winter-killing; one, all trees came out in good condition last spring. Lots of moisture. Duchess and Hibernal best. All made good growth this summer; two, shrubs, trees and plants, everything in good condition; one, yes, Peerless, N. W. Greening, Malinda and Anisim hurt some. Fall was dry. Trees and shrubs wintered fairly well; one, yes, both fruit trees and evergreens suffered, too dry in fall; one, all wintered well except Iowa Beauty, tips froze partly back; one, no injury whatever, conditions of soil favorable in fall 1908. Trees held foliage late in fall 1908, also this fall.

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Question. Are fruits going into this coming winter in good condition for wintering well, and is there much or little water in the soil? Out of nine reports received on this question, eight concur that everything is in good shape as to strength and vitality to go into winter, at the same time they report lack of moisture; one, plenty of moisture. (The reports all being made and received by me previous to Nov. 12th, the situation has since completely changed, as on Nov. 13 and 14th the district received a covering of from twelve to fourteen inches of snow. As there was no frost in ground at that time, the recent thaws and rains saturated ground well.)

Hardy Perennial Flowers: By the six reporting the following are mentioned: Phlox, peonies, Shasta daisy, lilies of all kinds, hollyhocks, sweet rocket and iris.

Hardy Ornamental Shrubs: Reports from nine. Snowball, spirea, hydrangeas, all kinds of lilacs, syringa, philadelphia, honeysuckle, bleeding heart, oriental poppies, caragana, cut leaf sumach, flowering currants, barberry, highbush cranberry, elderberry bush and flowering almonds. The last need covering in this climate.

General Remarks: One. "People too busy; I do not take time and pride enough to care for fruits or shrubs and flowers."

One, "Think flowers and fruits not in vogue here. We raise wheat, barley and oats, cannot find time for garden stuff."

One. "No one has done much in fruit growing; what is done is done for novelty, not for profit."

One, "My seedlings commenced to bear this year; they are five years old. I hope to raise more and better apples next year."

Another. "Apple crop not so heavy as indicated in spring. Fruit dropping all the time. Our apple crop was a little over 700 bu., mostly Hibernals."

Another. "In regard to Perfection it is the largest currant and seems to be hardy here, but too slow a grower. Bears well for a small bush."

Finally. Increase the membership to spread the gospel of the Minnesota State Horticutural Society through the splendid monthly, the Horticulturist, is the only way I can see to wake up our rural population to the splendid possibilities that lie right at our elbow over the whole state for the raising of apples and fruits of all kinds. I consider the eastern half of the Ninth Congressional District especially favored for fruit culture of all kinds, from Otter Tail county on the south to Roseau and Beltrami on the north, numerous lakes interspersed between the rolling waves of land and timbered groves with a variety of soil. If a northern exposure is necessary for the best orchard sites, the people in the Red River Valley who now seem to raise the bulk of apples that are raised in the district must be badly handi-

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capped for lack of slopes of any kind, but many are succeeding, because they try, and try faithfully, honestly and in earnest. No way without will. Your trees, fruits, shrubs and flowers will grow after properly planting and a little care, while you are sleeping or visiting or attending to the raising of your grain crops and potatoes. They are growing while you flit to the South, or Mexico or the Canadian Northwest, sunny Alberta, to find a finer region for contentment and comfort than you imagine you have here. Wake up, brothers, neighbors, friends! Wake up for your own good and for each others' good! Make your resolves this winter to make a beginning to plant fruit trees!

A Top-Working Experience.

W. J. TINGLEY, WITHROW.

My first Hibernal trees to be top-worked were set in the spring forty rods from any windbreak. The top-working was commenced in the summer of 1901, when buds were set of the following varieties: Superb, Duchess, Fameuse, Wealthy, Patten and Longfield. As this was my first attempt at budding I did not have any great success. But I still felt encouraged, and the following spring I set a number of grafts of different varieties—but this was like my budding, not a great success. But picking up a few points here and there, I learned the process of keeping the scions and setting them so they would grow successfully, after which I set scions with good success each and every year of all the most promising varieties I could get. These have about all done well, and the following varieties have fruited one or more years: Jonathan, Double Stone, Homer No. 1, Molly, Yahnke, Newell, N. W. Greening, Fosberg, Grundy, Perfect, Hutchins, Bert, University, Patten, Duchess, Wealthy, Peerless, Longfield, Brilliant, Eastman, Anisim, Yellow Sweet, Beautiful Arcade, Nelson, Okabena, Peter and Grimes' Golden. Fameuse, top-worked on Hibernal in 1902, have fruited some for the last five years, and this year gave a very good crop. This I consider my best eating apple, but to have it at its best do not pick it till the end of the first week in October. The scions for these grafts were taken from a neighbor's tree which has now long been dead and gone, while the grafts are sound and good and look as if they were good for many years to come.

One Brett, set in Hibernal in 1902, has borne more apples in the last three years than the two old Brett trees that were set in the spring of 1897, bearing this year two and one-half bushels of nice large apples. N. W. Greening scions, set on Virginia crab in 1906, fruited this year

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for the first time and look promising, while the old trees have never borne an apple and are half dead. Milwaukee scions, set on Virginia and Hibernal in 1906, had some apples last year and this year quite a heavy crop of large red apples, that hang well to the tree.

The Superb buds that were set in 1901 have borne some apples for the last five years and this year yielded from one to three bushels per graft of large, nice, yellow apples that will keep till mid-winter. This tree is not over hardy but has done better with me than the N. W. Greening, and when top-worked on Hibernal appears to do well. In cutting scions from the old Superb tree in the spring of 1907, I found the new growth was discolored, but on cutting scions from the Superb that was top-worked on Hibernal I found the new growth perfect.

Evelyn top-worked on Faribault, in the spring of 1908, killed last winter clear down to the Faribault stock, while about two rods away Evelyn top-worked on Hibernal were not damaged any. The Faribault is a winter crab and a strong grower but does not mature its wood early enough to be a good stock to work half hardy winter varieties on. I like the Hibernal as a stock to top-work on; it has three good points: first, it throws out plenty of roots on the scion when root grafted, making a tree on its own roots; second, it is a very strong grower and will keep up with any variety I have grafted on it; third, it makes an early growth and ripens up its wood early, shedding off its leaves while many other varieties are still growing.

Mr. Busse: What percentage of Jonathans survive after the first winter?

Mr. Tingley: I never had a terminal bud killed on the Jonathan.

Capt. Reed: Ever had any killed top-grafted?

Mr. Tingley: I have had the Evelyn killed but not on the Hibernal.

The President: Some day we are going to get this top-working in systematic shape; at present it is not.

Mr. Tingley: I don't think it is.

The President: You said you grafted the Evelyn on the crab, and it killed back?

Mr. Tingley: Yes, sir.

The President: You said on the Hibernal it stood all right?

Mr. Tingley: Yes, sir.

The President: I never heard those facts before.

Mr. Richardson: He grafted a variety on one kind, and it was exceedingly large, and on another it was small.

The President: These are all experimental facts.

Mr. Tingley: The reason why it killed on the Faribault crab is because it is a late grower and did not ripen up at the top, and the root did not ripen up.

Capt. Reed: How early do you commence to top-graft?

Mr. Tingley: Just when the temperature gets up to fifty-five, and up to when the apple begins to set.

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The President: Does the tree take the form of the graft or the stock?

Mr. Tingley: It takes the form of the graft.

Mr. Sahler: I showed here yesterday the largest Salome and Malinda top-worked on this Faribault, and I got the people here to test the Salome and the Malinda. They were the largest shown here, and they were grafted on a tree that is hardy.

Mr. Bunnell: Has anybody grown the McIntosh Red?

Mr. Tingley: Mr. Philips says I have the McIntosh Red on the Hibernal, and I shall believe it until I know it is not so.

Mr. Philips: The McIntosh does well on the Virginia. If you want a nice tree, cut off a foot of the limb next spring, and graft it, and you will have a nice tree.

Mr. Bisbee: I cannot add anything to the interest of this paper because his experience has been like mine.

The President: Have you any grown on the Malinda?

Mr. Bisbee: I have some growing on the Hibernal, and they are doing fine. I have the Salome and Northern Spy on the Hibernal, and they are doing very well.

The President: Any trouble with blighting?

Mr. Bisbee: No trouble.

The President: Do you cut the whole top?

Mr. Bisbee: No, a branch not bigger than my thumb; otherwise they don't heal over as well.

The President: Whip or cleft graft?

Mr. Bisbee: Cleft graft.

Mr. Elliot: What proportion do you cut off, if any?

Mr. Bisbee: Clear out where the stock is,—the size the graft is to be. I have forty varieties on the Hibernal.

The President: Did you have the Foster killed back?

Mr. Bisbee: No, not at all.

The President: What was it grafted on?

Mr. Bisbee: It was grafted on the Peerless and killed back, but on the Hibernal it is all right.

The President: How long has it been grafted?

Mr. Bisbee: The Foster has been grafted three years. I first placed the graft on the Duchess, but it did not do well; it was grafted ten or twelve years ago. But three years ago I grafted on the Hibernal, and this year I had to support the branches they were so full of fruit.

The President: The big yellow Foster apples?

Mr. Bisbee: I have also the Baldwin. I raised a barrel of Baldwin, mostly on the Hibernal.

The President: You seem to think the Hibernal adds hardiness.

Mr. Bisbee: It does decidedly, to anything I put on it.

Mr. A. B. Lyman: The only Wealthy we had that passed through that winter of 1884 was one Mr. Gould grafted on a crab.

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Mr. Latham: That was the parent of all those seedlings you have growing?

Mr. Lyman: I think the parents of the seedling apples were some Wealthy trees near the house that were worked on some Siberian crabs, and I think they became brush from blight before 1884. We had one tree that winter.

Mr. E. A. Smith: In regard to the Superb apple: the trees are thrifty and vigorous and bore two barrels of apples the past season, and they bore heavily two years ago. It is not on its own roots.

Mr. Elliot: You mean it is piece-root grafting?

Mr. Smith: Yes, sir.

The President: As I came into town this morning, I happened to sit down with a former student, and I want him to tell about the Hutchins apple. How many trees did you plant altogether?

Mr. L. W. Smith: About four thousand trees. We have from fifty to seventy-five Hutchins. These Hutchins trees were set in the spring of 1901, and the Hutchins started bearing in 1904, and have been giving good crops every year since. Some of the trees this year have been bearing between three and four bushels to each tree. The Wealthy was planted the same year and has practically done nothing. The trees are planted on rich soil and have made a large growth of wood. They were all planted in the same orchard. The Hutchins we planted on a north slope, with a rather deep soil, and the Wealthy we planted on shallower soil, with a clay sub-soil. They have averaged over two feet of growth each year.

Mr. Brackett: Were they cultivated?

Mr. Smith: Yes, they were cultivated. This year we seeded the Wealthy orchard to millet to check the growth. Last year we pruned them severely and then sowed the orchard to millet.

The President: About this Hutchins apple that has borne for six successive years. I happened to sit opposite Mr. Underwood at dinner today, and he told me the history of the Hutchins apple was this: He was down town at Lake City and a grocer brought out a nice apple, as big as his fist, and said, "I raised that apple in my back yard." Mr. Underwood saw it was a good apple, and he propagated it, and Mr. Smith happened to get some of the trees. It is a large apple, about like the Duchess. It is an inferior apple, it water cores, but it looks good and has proved the most profitable proposition they have raised in that orchard. It is not on our list, but I thought I would bring the facts out here.

Mr. Brackett: I want to ask Mr. Bisbee if he would recommend grafting the top all in one year, or if he would recommend grafting part of the top one year and the rest next year, instead of doing it all in one year.

Mr. Bisbee: I would take three or four years.

Mr. Howard: I have had that Hutchins bearing five or six years, and I have always told Secretary Latham it is a good thing. I have a plate down stairs, where you can see it as a top-worked variety. I have top-worked it on the crab; it is a good thing.

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Mr. Loomis: Is it not better to top-work in part than it is to graft all the limbs? I put on seven or eight, and when I get so much tree, I have to cut away a good deal to get rid of it.

Mr. Howard: I would rather have three or four grafts because I can shape the tree better.

Mr. Elliot: The question was asked as to how early in the season grafting could be commenced, and I don't think it was answered. You can set a tree this spring and, if you wish, you can top-graft it, or you can bud it so you do not have to wait long for it to make a big crop.

Mr. J. F. Harrison: Is the Martha good to top-work on?

Mr. Busse: It is not good at all. While it makes a good union, it splits and does not make nearly so good a union as the Hibernal. It also splits at the forks. That is the nature of the Martha crab.

Mr. Kenney: I would like to ask Mr. Howard—who has had a large experience—if he does not think as a general rule that almost any kind of a tender variety can be top-worked with safety.

Mr. Howard: I think they can. I have Hibernal and Duchess top-worked. I have quite a number of Malinda top-worked.

Mr. Sahler: As long as the Peerless was killed off the list, would it not be a good idea to top-work the Peerless with the Wealthy,—I have about a hundred Peerless trees.

Mr. Higbie: If the tree is not of large size, it is not worth while to top-work it. Last spring I had some trees I was determined to top-work or kill. I sawed the limbs off three inches from the stock and grafted them and had fine success.

Mr. Philips: How long a growth did you get on them?

Mr. Higbie: From two to four feet.

Mr. Sahler: I want Mr. Howard to answer that question.

Mr. Howard: The Peerless is a poor tree to graft on because it does not pinch the scion enough. You have to graft close to the stocks. I had mine top-worked.

"In Southern Illinois, the most successful orchardist is he who gives his orchard land thorough cultivation until, say, July, then either seeds the ground to cowpeas, soy beans, clover or even rye. He permits this to grow as long as it will, then allows it to remain on the ground as a cover crop until next spring, when it is plowed under and the monthly cultivation continues just as is done in California."

A New Name.—The Western Horticultural Society has changed its name to Manitoba Horticultural and Forestry Association, and the scope of its work has been enlarged to correspond with the change of name. We are pleased to note that Dr. H. M. Speechly, of Pilot Mound, Man., who visited at our annual meeting a year ago, has been elected president. Prof. F. W. Broderick still continues as secretary. A little folder issued by the society indicates that they are also sending out plant premiums as an additional method of interesting the members, as is done in this society.

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An Amateur in the Strawberry Patch.

DR. O. M. HUESTIS, MINNEAPOLIS.

You will notice by the title of my paper that I am not a professional nor a commercial grower, but for the last five years, at Mound, Lake Minnetonka, being fully persuaded by earlier experience that one hundred plants well cared for are better than five hundred neglected, I have planted one hundred each year, which would give me two beds producing one hundred quarts for each hundred plants set. Some years they have been Bederwood and Warfield varieties, and other years Dunlap, the latter being my favorite, although more work to care for on account of producing many more runners.

In making a new bed I take land which has been manured and grown a crop of corn the previous year, ploughed in the fall, again in the spring and thoroughly harrowed. Taking from my fruiting bed good, strong runner plants, where they seem to be thick or out of line, being careful not to disturb those nearby, and with a good quantity of soil on the roots, I set them eighteen to twenty inches apart, in rows four feet between, permitting about six runners to grow from each plant. This makes a patch two rods long and one wide, which is just one-eightieth of an acre, and contains one hundred plants.

As to cultivation, I have found that about two hours each week one can go over thoroughly with a hoe, keeping the soil loose and weeds and runners under control; and by using a good quantity of wood ashes between the rows, early in the season, hasten their growth, and the putting out of runners early—which first runners I think best, as they become established and quite as large as the mother plant early in August. Then keep off all subsequent runners when cultivating. The last few times of cultivation in September I aim to make quite a depression between the rows in which to carry off the late fall rains, which if allowed to remain around the plants and freeze might cause their destruction.

Noticing in some journal, August 15th this year, a Mr. Goldsborough—probably of Missouri—says he never saw a big strawberry picked from a fall set plant, the next morning, before breakfast, I lifted about forty of my best runner plants and transplanted them. There did not seem to be any setback in their growth, and I am expecting a plate for the June meeting from them. But, as a rule, I have not found fall set plants to be a success.

As soon as possible after Nov. 15th I mulch with hay cut about the place during the summer, to a depth of three inches, and add a few cornstalks to retain the hay. This year I did not cover until Nov. 23rd, after the ten-inch snowstorm of the 16th, at which time I found about

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two inches of snow and ice in the depression between the rows. In the spring I loosen up the mulch as soon as the growth of the plants would indicate, and after a week or ten days remove, leaving some of the finest between the rows.

In treating my patch for the second year I mow as soon as fruited, leaving the foliage for about five days, thus not exposing the shorn crowns to the hot sun in their weakened condition from fruiting. Then I plow or fork under all remaining plants except a ridge eight or ten inches wide on one side of the old row—which will surely get under all your oldest plants—and cultivate as I would a new bed.

On my eightieth of an acre I had one hundred quarts, and had I

Dr. O. M. Huestis and his strawberry patch—at Mound, on Lake Minnetonka.

sold them—which I did not—they would have netted me, at even ten cents per quart, at the rate of eight hundred dollars an acre.

I want to say in closing that I believe there are one thousand men in Minneapolis who have families who are willing to work hard the whole year for less than one-half of what two acres would produce in strawberries each year; and there are two thousand acres within two miles surrounding the limits of this city, and ten thousand vacant lots within its limits, which could be rented for the taxes, giving employment to thousands of the city's children, just after the closing of the public schools, and giving to the citizens sweet, fresh, ripe strawberries within four hours of their picking, instead of those shipped in ice (which almost ruins a strawberry) from Missouri, Kansas and Iowa, four days old, which necessarily had to be picked before being ripe and sweet—as well as giving us all inspiration to get where the Creator thought best to place the first man and woman He ever made, viz., in a "garden."

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My Experience with Top-Working.

O. M. MOORE, SPRING VALLEY.

First. If we wish hardy stocks we plant root-grafts of Hibernal or of Virginia crab and then graft them to any variety of apple that we wish in the nursery row when two years old, and when three years old they are ready to transplant into the orchard. We prefer the Hibernal for this work as it roots from the scion more readily than the Virginia crab. By this method we get trees that are not as liable to root-kill as if we planted root-grafts that were grafted with scions that we intend to grow for orchard trees. The Hibernal as a fruit tree we think very little of, but as a stock, both above and below ground, for our more tender varieties we think that it has no equal for this purpose in the state of Minnesota. Trees grown in this way cost more than the ordinary root-graft, as they are grafted twice or, in other words, are what we call double-worked trees. But they are worth the extra cost.

Second. There have been thousands of apple trees planted in southern Minnesota and grown to bearing age that the planters have found out are not what they want, and many consider the money that the trees cost, the time and labor spent in growing them and the use of the land almost a total loss. But this need not be so. Those trees if taken within eight years after planting can be successfully top-worked to some other good varieties that will bear fruit. It is very true that it will cost something to do this, but even with this extra expense it would be much better to endure than to have those trees remain a living and barren mistake in the eyes of the owner and his friends.

As to the best methods of top-working apple trees, the writer's experience is to graft the leaders, or upright top limbs, the first year or, in other words, to take the whole upright top off and leave the lower limbs to be worked the second year. We never cut limbs larger than one inch in diameter. On all limbs over one-half inch in diameter we use the cleft, or split, method of inserting the scion. Limbs of one-half inch or under we prefer the side cut method in preference to the split limb, for the pinch pressure of small limbs is not strong enough to hold the scion with sufficient firmness for a perfect union. Limbs of this size should be wrapped with waxed cloth, as by so doing the lip, or side cut, can be drawn up tight to the scion, and the waxed cloth will hold it there. All split or sawed surface of limbs should be well waxed to keep out all air and water.

In shaping the scion care should be taken to not cut the edge of the wedge too thin. The cut should be about one inch long, and the wood

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of both limb and scion should touch the whole length of the cut. The inside edge of the scion should be shaped thinner than the outside edge, for the outside edge is where the union takes place, and the limb should press the outside edge of the scion with more pressure, that a union may be possible.

In grafting the lower limbs the second year, care should be taken not to set scions immediately under or over each other. For all scions grow perpendicularly, and if two limbs come one over the other the top one should be cut shorter and the lower one longer so that they may both have room to grow without interfering one with the other. The aim of every top-worker should be that when the tree is finished he will have a well proportioned and well balanced top which may be a thing of beauty and a joy forever.

FROST PROTECTION BY SMUDGE.—In a paper, "Protection against Frost by the Smudge or Smoke Process," F. M. Boyer, of Posey, (Ills.), put up a strong plea for this method of protection of orchards against late spring frosts. He said that one should not wait until just before needing the material for a smudge before getting it ready. Take pains during the whole year, when clearing up the premises, to save the refuse boards, posts, rails and all such materials that naturally accumulate about a farm. Also save the orchard prunings, piling them where they may be burned without injury to the orchard later in the spring, if not used for smudge.

In the spring, keep a sharp lookout on the weather predictions, even if you have to wire or telephone to the nearest station where weather forecasts are received. In preparing for the smudging, he dug pits 3x6 feet, by about 12 inches deep, about 300 feet apart along the west and south sides of his orchard. In these he placed the old rubbish in such a way as to cause as little draft as possible. After the kindling and wood had been placed in the pits, he covered the whole with 3 or 4 inches of sawdust. Over this he threw a thin covering of dirt to keep it from burning readily, and then added more sawdust, or old damp straw, or hay, in fact, anything of that nature that would burn slowly.

To be ready for the most severe test, which is usually from 1 until 5 o'clock in the morning, he lighted his fires at 11 p. m. and gave them attention every few minutes during the entire time of burning. The fires must be given attention every 20 or 30 minutes for the best results. He said that one must not think the danger was over as daylight approached, for he had often seen it two or three degrees colder at 5 in the morning than it was an hour or two before. Mr. Boyer went into details as to the good results obtained from smudging, showing that he had saved thousands of dollars by this simple process.

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Industrial Contest for Minnesota Boys and Girls.

A. D. WILSON, SUPT. FARMERS' INSTITUTE, ST. ANTHONY PARK.

The Industrial Contest is a contest in the production of grain, corn, fruit and vegetables, and in sewing and baking, by Minnesota boys and girls under eighteen years of age.

History. An industrial contest was first begun in 1904, in Olmsted County, by Supt. Geo. F. Howard, and in 1905, in McLeod County, by Supt. L. P. Harrington. In 1906 the work was taken up as a state movement by the School of Agriculture, under the supervision of Principal D. D. Mayne. Since 1907 it has been handled by the Farmers' Institutes Department.

Fruit exhibit in Industrial Contest, Pope County.

From $1,200 to $1,500 in cash has been distributed each year as prizes in the state contest, and many times that amount in the various county contests.

Object. The object of this work is to get the boys and girls interested in the general duties about the farm and home, so they will see more in the things being done about them. So many boys and girls are brought up in the country in touch with the affairs of the farm and home and never learn to know or to understand these things, simply because their attention has not been called to them. Once they are interested and encouraged to do their best, they see that there is in reality a great deal to the things they have considered so simple. When they realize that there is a good way and a poor way to do things, and that real skill and knowledge are required to do them well, they see that these plain tasks are really worthy of and require their very best efforts.

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Agriculture in Rural Schools. The popular and important educational movement of the time is industrial education or an effort to bring the school more closely in touch with the activities of the people. The introduction of mechanical, home economics and trade courses into city and village schools is comparatively easy, as they are, or may easily be, well equipped and have well trained teachers. In the one-room district school, with young teachers educated in high schools and with no training in agriculture and no knowledge of, and often little interest in, agricultural conditions, the introduction of industrial education is more difficult.

The Industrial Contest is the most logical means at hand of establishing in our rural schools, as they are at present, a study of agriculture and home economics. The boy wishes, for the sake of a prize, to produce the best possible sample of corn. The girl wishes, for the same reason, to make the best possible loaf of bread or work apron. In this way the contest arouses in the pupils a desire for knowledge, and since this knowledge is supplied to all contestants on the farm in bulletins and circulars, it enables the teachers to study with the pupils the problems so closely connected with the farm and home, even though she may have had no special training along that line.

By this means the contest accomplishes the most desirable feature in any school system, that of associating the school with the home life of its students.

Plan of the Contest. The main work of the contest is done in the various counties, under the supervision of the county superintendent of schools. A county contest is arranged for and prizes offered, and the work is done through the schools. The outline and literature being furnished by the state, makes the work uniform throughout the different counties. Winners of the first six prizes in any of the classes in any county contest are eligible to compete in the state contest. This brings to the state only the very best exhibits from every county.

About forty counties are taking a more or less active part in the contest, and at least ten thousand boys and girls have been trying, during the past summer, to grow better corn, grain, fruit or vegetables, or to cook or sew better.

Results. Results obtained so far have been most encouraging. Wherever the work has been given a fair trial both county superintendents and teachers have noticed an increased interest and attendance. Instead of the contest detracting from the other school work, it has been a benefit to it. One county superintendent writes: "The whole attitude toward the school question has undergone a change

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since the contest was begun in this county. The parents are interested, the pupils attend school very much better, and the matter of discipline troubles us very little."

One year in McLeod County a farmer said to the county superintendent after the contest was over, "My boy raised better corn than I have ever been able to produce on my farm." When asked how he accounted for it he said, "He has read and studied more about corn growing in the last two years than I ever did in my life."

If any one doubts the value of this work, we would like to see him at one of a dozen counties in this state on the day of the county con-

Fruit exhibit in State Industrial Contest.

test, where he could meet from one hundred to five hundred eager, interested, wide awake boys and girls as they flock about among the exhibits to see who has something better than they and to learn why the judge is placing one sample over another. We would also wish to call his attention to the still larger numbers of people who come to the contest just to bring the children.

What This Means. If the contest were but a one day affair, it would be justified, but one familiar with conditions in the country knows that it is much more than this. These same bright, earnest boys and girls are thinking of their exhibits more or less throughout the year. They are questioning parents and teachers as to the best

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way to make, produce or select their exhibits, and in this way the contest resolves itself into a continuous course of study of the every day life and duties of the farm and home and is, we feel, a potent factor in bettering the agricultural conditions of the state.

Extension Work. We are especially pleased that under the new extension appropriation Supt. Geo. F. Howard, formerly superintendent of schools in Olmsted County, has been employed by the year to devote his entire time to promoting the Industrial Contest.

We feel that this work should be extended until each one of the quarter of a million rural school pupils in the state shall have an opportunity to learn in the school something about agriculture, the profession he is most likely to follow, in after life. The Minnesota Bankers' Association, realizing the importance of the work, have appropriated $1,500 per year for five years to be used for prizes in the state contest.

Co-operation. We earnestly solicit the co-operation of the State Horticultural Society and its individual members in promoting this work. While we do not assume that this contest is a panacea for all the ills to which Minnesota agriculture is subject, we do feel that it is an important factor in raising the standard of agriculture and improving country life conditions in Minnesota.

The President: We are all very much interested in this subject. I would like to ask a question. Do you remember, Mr. Wilson, how many counties made exhibits this year?

Mr. Wilson: There were exhibits from over forty counties. The object of the state contests has been to promote this work throughout the state, and there has been great interest in many of the counties and very good work done by some of them. In McLeod County this year there were over 800 entries; in Olmsted County there was a still larger number, and in a dozen more counties there were from 200 entries up. I wish anybody who is interested in this movement, or any one who is skeptical of the value of the movement, might visit one of these contests and see the boys and girls bring in their exhibits and see the interest which they show and hear the questions that they ask as to why some exhibit is better than the one they brought in, and I am sure that person would be fully convinced of the value of these contests. As I said before, it is a stimulus to do better work on the farm and dignifies the common plain tasks of the farm and farm home.

The President: It not only sets young people to thinking, but the young people make the old people think. (Applause.) If I am not right in this statement, I wish you would correct me: The Olmsted County Fair was not a success until they came to the point where they called it the Olmsted County Children's Fair—then it was a success. At last year's fair Mr. Howard said he had $2,400 cash for premiums for the Children's Fair, and then it was a success, and they never had

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more money than when they made it a Children's Fair. (Applause.) There were something like 500 plates of apples exhibited at the county fair by the children of that county. The little fellows in Olmsted County are all horticulturists, and they would make a creditable showing in a society like this.

Mrs. Ruff: What steps are taken to get people interested in the work?

Mr. Wilson: We take up the work with county superintendents and at the county teachers' and school officers' meetings, and after the work is organized in a county it is under the direction of the county superintendent. Last year the Institute Board sent a man out for several months. He traveled with the county superintendents visiting the districts, visiting from two to five schools each day and speaking to the boys and girls and getting them interested in the work.

The Secretary: What are the premiums offered and how is the money secured?

Mr. Wilson: The grain and milling interests of Minneapolis have contributed $1,000 each year for prizes for wheat, oats and corn. The Business League of St. Paul has contributed $200 each year for sewing and cooking prizes. The Horticultural Society contributed $100 for horticulture prizes one year, but since then the horticultural prizes have been taken care of by the nurserymen of the state. The seedsmen of the state have contributed $100 each year for prizes for vegetables. There is one point I have noticed in these county contests. They are generally held in connection with a county fair, and it does not require a very discriminating person to notice that the boys and girls actually exhibit better samples of grain and other home products than the grown people. One farmer told me after the fair was over, "My boy has raised better corn this year than I ever raised in my life. I account for it in this way: the boy has read, studied and thought more during the last two years on the subject of corn production than I ever did in all my life." (Applause.)

The President: This is a wonderfully interesting line of work and fraught with great possibilities.

MUSTARD AND PEPPERGRASS are not appreciated half highly enough in this country. In England we have them in every garden. Absolutely nothing is easier to grow and nothing comes with better relish at a time when the appetite is jaded with last year's cabbage, potatoes, carrots and tinned goods. All one needs is some moist earth and the seed.

GROWING PEPPERS COMMERCIALLY.—"Four hundred dollars per acre has been made on peppers, and that, too, by a family I know to have registered this as their first attempt in pepper growing, having known nothing whatever of the business before venture was made. Peppers are among the simplest of garden plants to grow, as they seem to need no special culture."

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Seedling Apples on Exhibition at Annual Meeting:

WYMAN ELLIOT, CHAIRMAN AWARDING COMMITTEE, MINNEAPOLIS.

This call came to me on rather short notice. I could not get our committee together until this morning, and I have, therefore, had no time to prepare any notes or memoranda.

Just as preliminary to my talk, I want to say that forty years ago, that was about the size of our apples (exhibiting an apple about the size of the Whitney crab). All the seedlings we had at that time were about this size (exhibiting a walnut). Today I present you an apple that is three and three-eighths inches in diameter and which we call a first-class commercial apple. That shows a decided improvement, and still we are looking for greater improvement along this line.

Now, taking up the class of winter seedlings, we have here a seedling of the Wealthy. It has not as much color as the original Wealthy, nor is it as large as some of our seedlings, still it is a good commercial apple. The name is Lyman's Perfect. Here is another (indicating). Two years ago that took the first premium, but on account of its being propagated, which throws it out of the class of winter seedlings, we had to discard it. However, it is a first-class apple and the texture and flesh indicate that it is a seedling of the Fameuse. This is the Gem City. The tree is hardy and is being propagated and distributed in Wisconsin quite freely.

Mr. Sahler: How long will that apple keep?

Mr. A. J. Philips (Wis.): I have taken it out of the barrel and eaten it in April at Baraboo.

Mr. Elliot: Here is another that scores ninety points, and that is pretty good scoring. It is a very good apple; it is firm in texture, of clean-cut, acid taste, and the flesh superb, and that is what we call a first-class eating apple.

This (indicating) is a winter apple, a good keeper. I cannot tell what it is a seedling of, but its color would indicate that it is a cross with the Duchess. It has no name, it is put in as an early winter apple, No. 3, by J. A. Howard. This apple scores eighty points on account of its low quality, but it has good size.

Here is a first-class sweet apple (indicating), one of the best I have cut in several years, and we have scored it eighty-five, but I think perhaps by testing it later in the season it may rank higher than that. This is a beautiful apple; I cannot tell how long it will keep because I haven't its history. This comes from Mr. J. M. Brown, of Wisconsin.

Now, if there are any questions you would like to ask about these winter apples before we pass to the early varieties, I will answer them if I can.

Mr. H. J. Ludlow: Are these seedlings?

Mr. Elliot: Yes, they are all seedlings, but I do not know the parentage.

Here is an apple (indicating) that was put in the late winter class. The committee saw fit to transfer it to the early winter class. In going over these apples we found them entered, as we thought, in the wrong class, so we have transferred them back and forth as seemed

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proper to us. We have put this apple in the early winter class, and it is an apple that is of the same parentage as this (indicating), from the same lot of seed, that is, Wealthy seed. It is one that has recently come into notice and stood for many years without any one paying particular attention to it, but now they are top-working it to see what it will develop. This tree had four to five bushels of apples; it is entered by A. Brackett, of Excelsior, and is one of the Lyman seedlings. It is a seedling of the Wealthy and scores eighty.

This apple (indicating) scores the highest of any apple on the table. It is a beautiful apple commercially, and it is a delicious apple to eat. It is not a late winter apple, but it is put in the early winter class and scores ninety-two. That apple was entered by Herman Lillie, of New Ulm. At this season of the year it scores better than the Wealthy does. It is a good shipper, and it is going to be a magnificent apple to handle. We have no name for it yet; it is only called Early Winter. By writing to Mr. Lillie, I think you can find out its history.

Here is a seedling from Wisconsin. If I did not know the man who brought it here, I should place a good deal of confidence in it. (Laughter.) However, as it is, it shows for itself. It is a fine apple, and when I cut it, I said at once, "There is Fameuse blood in that apple." It is a very fine grained apple, white flesh, good flavor, and is grown by Mr. A. J. Philips, of West Salem. That apple scores ninety.

Here is the largest seedling (exhibiting apple) that we have here on exhibition. There is quite a contrast between these two apples (holding up a small and a large apple), and it shows what forty years has done for the development of apples in our state, and if I had time I would like to expatiate more on that point, but I cannot do it now.

This is one of that lot of seedlings of T. E. Perkins (indicating), one of the Malinda seedlings. It does not seem possible that the seed of the Malinda apple should produce an apple like that, but this is one of the cream of the whole lot, and it is a good one; it is No. 46. That tree had between four and five bushels of apples this year. I cannot give you the rating without looking at my notes, which I have not with me, but I know it rates about eighty-five or ninety.

Now, if there are any questions you would like to ask in regard to the seedlings on exhibition, I shall be glad to answer them.

Mr. Seth H. Kenney: In rating for quality I would like to know what ground you take in arriving at a fair conclusion.

Mr. Elliot: After a man has cut forty or fifty samples it is difficult to make a decision. When I cut an apple and put a piece of it in my mouth, if it appeals to my taste in acidity or sweetness, that is one point. The texture of the flesh is another. Many times I run across apples in cutting that are rather hard and tasteless, but if we could taste them two or three months later the flavor and texture would be very different. We have to go a little on our own judgment on those points, but as we cut apples we do not find them all in the same condition. For instance, there is one particular apple down there, a light yellow apple, that is good in September, October and every month up to June. It is a remarkable apple, and it is being propagated, but its color is against it. It is a yellow apple and does not compare with an apple of that class (exhibiting a large red apple).

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SECRETARY'S CORNER

A NEW SOCIETY TRIAL STATION.—A society trial station was located at Duluth through the action of the executive board at its last annual meeting. It is only lately that the matter has taken definite shape and Mr. A. B. Hostetter, of Duluth, appointed superintendent. This station takes the place of one which had been conducted for some time at Wrenshall under the management of Mr. F. B. McLeran.

A GOOD TEST OF PEERLESS TOP-WORKED.—In a recent letter Seth H. Kenney says: "I grafted twenty-five Peerless on all kinds of choice apples last spring, which will be a useful test three years from now when they come into bearing." More attention should be paid to this method of making unproductive trees productive. There should have been thousands of such trees, seedlings and others, top-worked in the state this spring.

PLANT PREMIUMS.—It will be noted that both on the inside page of our monthly and on the folder, the only places where the lists of plant premiums officially appear, it is stated that application for them must be made prior to April 1st. Quite a number of applications are coming in dated later than April 1st, and those who are making such applications and not receiving premiums will understand the reason why. This notice is intended to take the place of personal replies to such untimely applications.

A FRUIT PICKING BAG.—At our late annual meeting a fruit picking bag, such as is used in California, was exhibited by Mr. Langford W. Smith, R. R. No. 2, St. Paul. Mr. Smith has since taken pains to learn the price at which these bags can be secured and informs me that they are made in three grades costing delivered $1.50, $1.75 and $2.00. If persons desiring to secure these bags would address Mr. Smith as above at an early date stating the number and grade of bags desired and enclosing the necessary amount, he will attend to securing and forwarding them without further expense.

DEFEAT OF THE LAFEAN APPLE BILL. We note through the press the defeat of what is called the "Lafean Apple Bill" in the national congress. This bill not only regulated the size and shape of the packages in which apples were to be sold but also grading, packing, etc., and placed the operation of the law in the hands of inspectors, as we understand it. There developed serious opposition to this bill and great doubts as to its practical operation, resulting in its defeat. It would seem that a measure providing for a uniform size of packages in which to market apples would be a wholesome regulation. It may be that at some time such a law providing for something of this sort will be enacted.

THE MEMBERSHIP ROLL of last year, printed in the 1909 annual report, has been arranged alphabetically as to postoffices instead of as to names of members, so that members may easily note in the roll what others in their vicinity are members of the society. It is believed that this will be the means of strengthening fraternal relationship. As you greet a neighbor who is also a member, occasionally speak of the society and its service, and in this way you

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will surely help on the good work. In many localities it will be found that there are members enough so that a local society might be organized. In that case a communication to Secretary Latham will bring a model form of constitution for such local society. Where there are two or three earnest horticulturists, such an association can be well maintained with great good to the vicinity.

BEE-KEEPERS UNITE.—On April 7th a committee from each of the two state bee-keepers societies met and agreed upon a form of union of the two societies which was entirely satisfactory to all concerned. Dr. L. D. Leonard, of Minneapolis, was elected president of the united society, which is to be called the Minnesota State Bee-Keepers' Association. C. A. Palmer, of St. Paul, 1024 Mississippi St., was elected secretary and treasurer. The constitution of what was called the Minnesota State Bee-Keepers' Society was adopted by the new association practically in its entirety. The union of these two societies means a strong bee-keepers' association and should be followed by a rapid and substantial growth. This new association becomes, as were the old ones, an auxiliary of the horticultural society.

INJURY TO THE FRUIT CROP.—Many reports have come into this office from various parts of the state as to the probable injury to the fruit crop from the freezes of April 15th and 22nd. They generally agree that the injury is of a most serious character. A summary of these various statements would indicate that the currant, gooseberry and grape crops are an entire loss, that raspberries are very seriously injured, and it is a question whether any portion of that crop will be harvested. Strawberries fortunately were not in bloom to any extent, and as far as we can learn are not seriously injured. Plums were generally in full blossom, and wherever this is the case the plum crop is practically gone. A few late blossoms on trees in locations sheltered from the sun may possibly be uninjured.

The injury to the apple crop is the one which is most felt throughout the state. All early blossoming varieties, or varieties blossoming in warm locations, where the blossoms were caught by either of these freezes have suffered to the full extent of the bloom in loss of crop. Fortunately many varieties were not in blossom, including particularly those that are the later keepers, so that while there is a very serious loss in the orchard—and in some orchards undoubtedly a total loss—we are not yet prepared to concede that the crop as a whole is gone. It may be that even though blossoms that had not opened at the time of the severe weather should open later and set fruit, they would have been weakened to such a degree that the fruit would soon fall.

Minnesota never had a fairer prospect in its fruit crop in all lines than prior to the opening of this extraordinary spring, and the loss therefore is all the harder to bear, but, as Mr. Seth Kenney says in a recent communication, "if asked am I reconciled? my answer is *I have to be.*" It is no consolation to know that similar conditions prevailed throughout the middle west and similar results are to be expected.

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THE LATE PROF. WM. ROBERTSON.

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THE MINNESOTA HORTICULTURIST

Vol. 38 JUNE, 1910. No. 6

IN MEMORIAM

Prof. Wm. Robertson

Passed Jan. 19, 1910, Aged 52 Years.

The subject of this sketch, an excellent portrait of whom accompanies it as frontispiece of this number of our monthly, was born in Rock County, Wisconsin, Jan. 3, 1858. At the age of seven years he accompanied his parents to a new home in Freeborn County, Minn. Little is known of his earlier years except that he attended the public schools and academies of southern Minnesota and northern Iowa, finally reaching Carleton College, Northfield, Minn., in 1883, and graduating therefrom three years after with the degree of B. S. We know that in part at least he supported himself during the years of his schooling by working on the farm in summer vacations, in grain elevators or teaching school, as the case might be. Upon his graduation in 1885 he at once took up the vocation of a teacher, receiving the appointment of superintendent of the city schools at Willmar, Minn. In this position he remained for four years, when in answer to a call from the Minnesota College of Agriculture he became connected with the University of Minnesota as instructor of physics, remaining thereafter until the time of his death in some such relation to the State University.

It was during his first years with the College of Agriculture that the writer became personally acquainted with Prof. Robertson, and at about that time he became a member of this society. From then on until the time of his death he was one of the most useful and earnest workers in the society. While his name does not appear upon the roster of the society as an officer, except as vice-president during a single year, it was not on account of lack of fitness, as Prof. Robertson was well qualified to fill the highest position in the society with great honor to himself and benefit to the association. His repeated service whenever called upon at the annual meetings and otherwise was most effectively

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rendered, and it was only our regret that he was not always at hand at these gatherings so that we could have the continuous benefit of his assistance. The year before his death Prof. Robertson officiated as toastmaster at our annual banquet. His natural turn of mind displaying so much humor and flashes of wit made him especially fitted for such a position. This, however, was only the outcropping of his genial nature emphasizing and not concealing the genuine good sense and wisdom and earnestness that guided and filled his life.

After five years in direct connection with the College of Agriculture he was removed to a place of larger responsibility as superintendent of the Northwest Experiment Farm at Crookston, where he at once took up the work of developing a school of agriculture for that portion of the state. From then on till the time of his death his life was full of this great purpose to make a large success of the Crookston School, and in this there is full evidence that he accomplished what he had undertaken with the material assistance of his wife, who upheld his hands in every undertaking. Our society is under many obligations also to Mrs. Robertson, who is even now holding the office of vice-president of the ninth congressional district. Prof. Robertson was married to Miss Eva Blanche Loomis in 1884. At his death he leaves also one son, Lynn, who is a graduate of the School of Agriculture, and, we understand, is now engaged in teaching.

The passing of Prof. Robertson is a deep personal loss to the writer, with whom were established not only friendly but even intimate relations. Where shall we see his like again?—Secretary.

The President: Mr. Busse, what have you to say about early cucumbers?

Mr. Busse: I start them in a small greenhouse, and sometimes I start them right on the bench. They remain in the house until I have cut the first crop of lettuce, and then I move them into the hothouse until all danger of frost is over. By doing so, I get good cucumbers. We pinch off the first bud that appears. There is one secret I found out some years ago. When some real cold night comes, I throw something on the soil where the cucumbers are planted. If you chill the cucumber, much less freeze it, it is no good whatever.

Capt. Reed: I don't think there is any sweet corn ever grown that is any better than the Golden Bantam.

The President: That is good for an early corn, but for a late corn it is not as good as Stowell's Evergreen.

Mr. Pabody: I agree with Capt. Reed that the Golden Bantam is the best for both early and late.

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The Lumberman's Attitude toward Forestry.

JOHN E. RHODES, PRES. MINN. FORESTRY ASSOCIATION, MINNEAPOLIS.

I am interested in forestry in spite of the fact that I am in the lumber business. I might say I am interested in forestry because I *am* in the lumber business. The lumbermen have looked upon the forester in the past as a good deal of a crank. There was considerable antagonism between the forester and the lumberman. It is the lumberman who blazes the path. While the theorist looks around for danger, the practical man has his gaze concentrated upon his own business. There are on my grandfather's farm in New York a good many stumps of black walnut larger around than this desk. Those trees were originally cut for firewood, because at that time they had no value and could not be cut for lumber; hence they were used for fuel. The same is true of lumber operations in this country. They cut the white pine because it had the greatest value; later they cut the Norway; and as the price of lumber has advanced the log has decreased in size, the available trees of highest value have decreased, and they have taken one species after another. The lumbermen are taking increased interest in forestry simply because the timber supply is getting to a point where they can afford to do so.

There are two obstacles to the practice of forestry. Lumbermen are confronted first by the fire risk. There is more timber burned in this country every year than is cut by the lumbermen—a great deal more. The lumbermen feel they should not be criticized for what is called "wanton destruction of the forests." Lumbermen are engaged in the cutting of the timber for the purpose of supplying the demand that exists for it, and the public generally is equally responsible and should share that responsibility with the lumbermen. The great prairie sections tributary to Minneapolis, the great state of Iowa, southern Minnesota, North Dakota and South Dakota, could not have been built up by the people with the rapidity they have been had it not been for the near and cheap supply of lumber, and if these great forests had not been sacrificed the present development of this great prairie country would have been impossible. It would not only have meant much to the development of this prairie section, but it would have meant much to the nation at large and to the world at large if the sacrifice of these forests had not been made.

As the lumber production has decreased and the price of timber has increased from 50 cents to $5.00 and $10.00 per thousand feet, it has become possible to consider the expenditure of money for fire protection and for other things relating to forestry. Some reference has

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been made to the burning of slashings, and by that is meant the refuse left from logging operations. Lumbermen having large interests found that their property was menaced by timber in which the "slashings" had not been burned, and they favored the law which was passed by Minnesota requiring slashings to be burned. That law is being generally complied with. The lumbermen found it did not cost as much as they thought it would, and they are now taking care of the slashings at 25 cents to 50 cents per thousand on an average. They are sorry they did not do it years ago, and when they add 25 cents to the present value of the timber for fire protection it is a small percentage of the cost compared with what it was when standing timber was worth $1.00 per thousand.

Lumbermen in the west are interested in organizing extensive fire protection systems and are co-operating with the nation and state in an effort to establish a federal system of control, putting in telephone lines, hiring extra men during the dangerous season, and taking every possible precaution to protect their timber from fire. The chief cause of fires is railroads; forty-five out of every hundred fires are started by locomotives. Railroads co-operate actively in keeping their rights of way cleared of dead grass and leaves because it is in that way that fires usually start. Thirty-five out of every hundred forest fires are started by settlers clearing land. If the land is to be used for cultivation, the settlers are anxious to clear it off as rapidly as possible, and the quickest way to do this is to burn the refuse, and they are not cautious enough in taking care of these fires. When there is a high wind and a dry season, there is extreme danger. It was the settlers who caused the fires in northern Minnesota and Wisconsin two years ago. Those fires worked such great destruction that the settlers who were responsible for starting them were arrested and taken before a justice of the peace in the town, where they were fined $5.00, and they said, "It is worth more to us than that to have our land cleared." There was no healthy public sentiment back of the law. The pine will grow if the fires are kept out but will not if the fires are not kept out. If the fires are not kept out, it will burn up the small seedlings, the cones are destroyed and worthless brush will come up.

The second great obstacle to the adoption of forestry by lumbermen is the question of taxation. There is much agitation in the country for the preservation of forests and for reforestation of cut-over lands. The lumbermen are interested in this question just as much as the foresters or the public and hope some solution will be worked out. It takes from seventy-five to eighty years to grow a white pine tree to merchantable size. We are confronted with the fact

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that we are obliged to pay taxes every year upon a crop that has not been harvested or that may not be harvested twenty years hence. The farmer pays taxes on his land, but he harvests a crop every year. The lumberman may pay a large amount of taxes before his crop is harvested. The present system of taxation makes scientific logging methods absolutely impossible. We have considered this question from every standpoint, and various plans and methods have been proposed. There is before the people of the state of Minnesota a proposed amendment to the constitution, permitting the legislature to enact a special forest land tax law. If there exists sufficient public sentiment in Minnesota that amendment to the constitution will pass. It is very difficult indeed to arouse sufficient interest on the part of the general public to vote in favor of an amendment to the constitution. We need to go through a few more fire years such as we have had in the past to arouse public interest to see the necessity of revising the tax laws, and if there is a demand for practical forestry methods we must secure some relief from taxation, or they cannot be undertaken.

The lumberman is greatly interested in forestry schools. We are particularly interested in the forestry school of this state in charge of Prof. Samuel B. Green. We look to the foresters that are now being educated to work out these problems for us. The lumbermen who are now passing—the older generation of lumbermen—who have been engaged in business under methods in vogue for the past forty years, cannot be expected to see the necessity for new methods. They cut the timber to supply the demand that existed then, and they did it in the cheapest possible way. It has only been within the past five or seven years that the people have come to realize that the timber is not inexhaustible—the older lumbermen now realize it.

The production of lumber has about reached its maximum. It has greatly declined in Minnesota. In 1890 the production in Minnesota, Wisconsin and Michigan was 9,000,000,000 feet, and this year it has been less than 3,000,000,000 feet, but there has been a great increase of yellow pine in the southern and western states, so that the total production in the United States at large last year was greater than ever. It will be about the same this year, but I think it has reached its climax. Some reference was made by one of the speakers to the fact that the production was less in 1908 than in 1907. That was due to market conditions. You will remember that we had a panic in 1907, which retarded building operations and which extended its effect into 1908.

I also wish to refer to a statement made by one of the speakers in reference to a decision by the Maine supreme court. The papers of

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the country had a great deal to say in regard to it. The state of Maine has a peculiar law, under which the legislature can ask the opinion of the supreme court regarding the constitutionality of any law proposed before the law is passed. The state legislature of Maine asked the supreme court if a law providing for putting private lands under certain restrictions would be constitutional. The supreme court stated that under the conditions mentioned, which would inure to the benefit and welfare of the community at large, such a law would be constitutional, but the law has not been passed and the constitutionality of it has not been passed upon. Investigating that subject, we find if there is a tendency to restrict cutting on private lands it is going to result in very serious complications, for this reason: that if the law prohibits the cutting of trees of certain diameter, you immediately get into technical forestry, because different species of timber are of different growths and ages. There are also different requirements for different sizes of logs. We are looking to foresters to work out questions of this kind.

Personally, I have no fear of a timber famine in the future, because I feel sure that, with the careful study which is being given to the forestry question—especially by the lumbermen and timber owners—who, by the way, control three-fourths of the timber supply in the United States—they will find some solution of the question; but it will not be without further advances in values of timber lands, and that will mean a further increase in the price of lumber. Already the price has reached a point where you are using substitutes for lumber. Its principal competitor is cement, and the inroads that cement has made upon the lumber industry in the past few years you are all familiar with. A few years ago the average town had wooden sidewalks; today it is a rare thing to find a sidewalk not made of cement, and that change took out of the market the demand for millions of feet of plank. Fences used to be made entirely of lumber; now they are made of wire. Lumber is still being used for buildings to a great extent. Our buildings are nearly all put up in a hurry in the cheapest possible manner, and we are only just beginning to build them of fire-proof material. The price of lumber has reached a point that even where it costs to build a house of cement a trifle more than it would to build it of lumber, the cement will be used because it provides greater permanence, with a reduced fire risk. So we expect in the near future, possibly in fifteen or twenty years, to see a natural decrease in the production of lumber.

This also takes into consideration the lumber to be cut on national forest reserves and the increasing tendency of the states to buy timber

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lands for state reserves. We are going through the experience of the older countries. It is here exactly as it has been in Germany and France up to this stage, and there is no reason to believe that the future will be any different from what it has been in the old countries, where the consumption per capita of lumber is less than a hundred feet, compared with the per capita consumption in this country of five hundred feet. We will have to reduce the consumption per capita, protect our forests from fires, and provide a just and proper system of taxation. I may say in regard to this system of taxation that there should be no tax on land until a crop is taken from it, and when the crop is harvested it should be taxed for its full value. This method has several advantages: it enables the owner to protect the timber from fire; it eliminates the carrying charge which comes every year; and it makes it an object for him to save and protect the timber until it is ready to cut.

What We Are Doing in Iowa.

CHAS. F. GARDNER, NURSERYMAN, OSAGE, IA.

In my state we are trying to extend horticultural knowledge among the people at large so that they will better understand and be better able to meet the trying conditions of climate and all the environments with which we are surrounded. We have many locations where orchards are planted that are called ideal, but the trees do not get enough moisture, even in a wet season, no matter how much rain—it nearly all runs off, very little soaks in. On a small scale you have desert conditions. Then when a long, dry spell comes on the trees suffer for lack of water, and especially is this true if at this time it freezes up and a cold winter sets in. Many times within a few years after a heavy rain I have dug down near orchard trees and found the subsoil so dry that there was hardly a particle of moisture in it, like a bed of volcanic ashes in the desert. It is necessary to have orchard trees on well-drained land, but a certain amount of moisture is necessary to keep up a vigorous, healthy growth, so that the trees will be able to resist blight and promptly recover from any damage which they may have received from insects or other enemies. Small, shallow, open ditches may be made along each row, and two or three holes dug, six or eight inches in depth, in the best place to soak the roots of each tree, or, in some cases where it comes right, a circular basin be made near the tree, which will fill up with water, overflow and so on to the next. Keep your ditches as near level as

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possible, to prevent washing away of the soil. On the land that is well drained a thick covering of coarse manure or straw will check the motion of the water and cause it to soak in. All my experience in this line has been confined to work done on drift soil on limestone prairie.

In sight of my office window we have a tract of land prepared in such a manner that at any time we can run a good stream of water over it and soak the roots of every tree on it to our heart's content. On this trial ground we have many varieties of plums, prunes, apples, pears, etc. Also many kinds of small fruits are set out for trial. We expect to be able to prove that plenty of water at the right time has a great deal to do in determining the hardiness of plants and trees.

Mr. Chas. F. Gardner, Osage, Iowa.

Last season we planted a row of tomatoes on the south side of a row of large white pines that had been planted out more than twenty years, the row running east and west. Under natural conditions nothing hardly would grow in such a situation, but with plenty of fertilizer and water the vines grew over nine feet in length and bore as large a crop of fruit as I ever saw grown.

The people seem to be determined to kill off all that remain of our native trees and plants by permitting the browsing and tramping of farm stock while we are trying to induce them to spare fruit trees and plants from a like fate.

We are urging our people to do more top-working on hardy stocks, grown in the orchard or permanently elsewhere, to be grafted with such varieties as are of higher quality than those kinds which are recommended as perfectly hardy and suited to be planted in the extreme north.

One line of work that we must not neglect is to improve on the quality of the fruit we produce. In the near future we must grow almost perfect fruit, or we will not be able to sell it in the markets of the world at a remunerative price. If all the apples in our orchard are No. 3 and culls, we cannot put in our No. 3 as No. 1 because they are the best we have got. That won't do! The fact is we must grow better fruit and do better packing and put each apple in the grade where it belongs.

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As horticulturists we try to impress on the minds of every one the importance of breeding new varieties of fruits right here at home. In the southern part of our state (Iowa), this does not apply to apples, as they grow all the most desirable varieties, and when these are well grown perfection is very nearly arrived at.

Plant fewer trees and take better care of them! It is foolishness to advocate that good fruit can be grown without a good deal of intelligent, patient care. Insects and worms must be fought and subdued and that before they have done their work of destruction. What do you think when you see a man spraying a row of currant bushes after they have been defoliated by the currant worm? You would say, "There is a man locking his stable after the horses have been stolen." Currant bushes if properly taken care of will never show damage by the currant worm. Watch the bushes and spray as soon as the eggs begin to hatch. You know what to spray with if you read your horticultural reports, and if you do not read them I advise you to get a move on you and join this society and look the matter up, and then you will know what to do.

I am specially interested in the line of work of growing new varieties of plums and have been at it for some time. If any of you gentlemen will come down and see us when plums are ripe we will allow you to sample some that will do your soul good. Seeing and eating is better than any description that I can give. This is a great work and very much can be expected from it.

The time is not very far distant when plenty of good pears will be grown in northern Iowa. Good ones are grown now but in no great quantity. Part of Iowa, as you all know, is a great fruit growing region. Different varieties seem to be gradually extending to the north, new ones are coming in, and in a few years there will probably be as great a change for the better as has been developed in the past.

FERTILIZING ASPARAGUS.—**There has been much discussion as to the proper time for the fertilizer upon asparagus fields. The probabilities are that it pays to divide the applications, using part in the summer immediately after cutting. If all the manure and half of the commercial fertilizer were applied in the spring, and the other half of the fertilizer used at the close of the cutting season, ideal conditions should be furnished for the growth of the plantation. The disk or spading harrow can again be used to good advantage at the close of the cutting season.**

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Does Commercial Orcharding Pay in Steele County.

M. R. CASHMAN, CLINTON FALLS NURS. CO., OWATONNA.

Before entering on this subject, I will preface my remarks by stating that I believe commercial orcharding in Steele county and, in fact, all of southern Minnesota, is without a doubt the best paying and most profitable business on the farm. We are making steady progress along horticultural lines, and the majority of the farmers in this section of the state are now not only growing fruit for their own use but many, realizing the great opportunities in commercial orcharding, have planted out large orchards, which are just coming into bearing.

While we have many discouraging features with which to contend here in Steele county, we have on the whole made a successful battle in growing a good quality of fruit and finding a market for it.

The price for apples and, in fact, all kinds of fruit has been most encouraging to the fruit grower for several years past, and those who have had fruit to sell have had an opportunity to gain some knowledge as to what there really is in fruit growing. During the past few years, the farmers of this section have found that their fruit crop has taken a prominent place among the products which they have to sell and the proceeds derived therefrom have been of considerable consequence.

We know commercial orcharding pays in Steele county, and it is on this knowledge that thousands of trees have been planted during the last few years. It is just now that our farmers should be interested in horticulture. The planting of a commercial orchard is absolutely in itself a business. A tree cannot be stuck in the ground and then left to care for itself. If you go to the Pacific coast, you will find that commercial orcharding is made a business, a science, and the utmost care is given to that orchard to make it produce. The orchard is given fertilization, cultivation, and, in short, everything is done to bring about the best results. If a man wishes to make a success of any business, he must give it every attention peculiar to that business itself.

To begin with, where should the successful orchard be planted? I know there are a great variety of soils, a great variety of sites and conditions. I will say that the best location for your orchard is on the highest point of land you have. You cannot get it too high. I would then take the north or northeast slope and would plant the trees in rows running north and south, and east and west. I would plant in such a way that when they come into bearing

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in good shape, the branches of the trees running north and south would just touch, and that, of course, would depend much upon the variety of trees planted. I would give them plenty of room east and west for circulation of air, but have the rows north and south planted close so they will shelter each other from sunscald. I would plant at least eighteen inches deep, and when there is a deep top loam I would plant even deeper than that. I would cultivate my orchard the first three years, mulching lightly every winter, and then seed it down to clover and timothy. After that, the only special care required is in spraying and pruning the trees.

I might say that in selection of trees, I would plant four orchards in one: the first consisting of crabs; second, early fall apples; third, late fall and, fourth, winter apples. In this way I would not be putting all my eggs in one basket, and some section of this orchard would be profitable every year. How much should the orchard pay? Well, such trees as Wealthy, Peter and Patten's Greening will begin to bear after they have been planted six or seven years, and I believe it a fair estimate to say that with 120 trees to the acre the trees will pay on an average of $1.00 per year.

Consequently after they are nine years old (say you planted 120 trees to the acre and allowing twenty to die or kill out, leaving you 100 trees to the acre), they will give you an income of $100 per acre for every acre of trees planted. I believe that is a fair, conservative estimate of the money represented in an orchard.

Looks or Quality! Which?

JENS A. JENSEN, NURSERYMAN, ROSE CREEK.

The time was when any kind of fruit would sell at good prices if it only looked well. It was natural therefore for fruit growers to pay more attention to productiveness and hardiness than to quality. But now conditions are changed; there is more fruit produced than ever before, and there will be more still in the future. Transportation facilities are being improved, and our knowledge of the conditions necessary to success in the shipping of fruits becoming well understood, and we are coming into competition with the whole world. Apples have been shipped from Australia to Europe and to this country as well. Consumers are also becoming educated in the matter of the quality of fruit and are more discriminating.

There is a saying that we should "eat to live, not live to eat." There is much of truth in this in a way. Still, it is true that we all

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prefer to have what we eat of good quality, and I believe it is right for us to enjoy what we eat; otherwise the sense of taste would not have been given us. Whether I am right or not in this belief, it is a fact that all persons prefer food that is palatable, and in nothing is that more true than in the matter of fruit. I am firmly convinced that were growers to produce and put on the market only fruit of the best quality there would be a greater demand, and prices would be better.

When a consumer procures a package of fruit, and it is of poor quality, it will be a long time being used up, and when gone there is little desire for more, and it will be some time before more is purchased. On the other hand, if the fruit is of the best quality, every one enjoys it, and it is soon gone and there is a strong desire for more; so that more will be procured with little delay.

J. A. Jensen's fruit garden.

Nor is this all. Fruits of the best quality will command better prices than those which are inferior. There are those who will dispute this and will cite you the quotations of the market reports, which give the price of Ben Davis apples as within a few cents of what other varieties of better quality, like Jonathan, Grimes, McIntosh and others of like good quality are quoted at. Such persons may not know that fruits of the highest quality are not quoted in the price lists sent out. But those posted in such matters know that such is the case.

At one time in a Chicago commission house, the price of some Jonathans was asked, and being told that they were bringing $8.00 per barrel, expressed themselves in a manner that was understood as indicating doubt. The commission man called to one of the salesmen and asked what they were selling the Jonathan at. He replied: "Eight dollars to the trade and $10.00 to clubs." This was at a time when the best quotations were $3.00 to $3.25 per barrel.

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The best proof of my claim is the history of the fruit business of Oregon. There the growers have combined to grow apples like Spitzenberg, Newton, Delicious and others of like high table quality. They also grade and pack their fruit in the very best manner possible. No grower is allowed to pack his own fruit, but this work is all done by experienced and disinterested persons who make this their business. The result is that they are receiving prices for their fruit that if it had been told a few years ago as possible would have cast doubt on the sanity of the speaker. As an example I wish to say I have it from a reliable party, who got the facts on the ground, that the Hood River

Orchard Scene at J. A. Jensen's.

crop was sold this last season to the highest bidder, sealed bids being received from intending purchasers from all the large cities of this country and some from Europe. The prices offered for the whole Hood River crop ranged from $1.50 to $3.27 per box. Some may say that these prices are paid because of the perfection of the fruit, fine color and its freedom from insect injury. That no doubt had something to do with it, but it is nevertheless true that they do grow almost exclusively varieties of the best table quality and do not get the same high prices for inferior varieties. It should be remembered that there are a great many persons now who have the means and are willing to pay almost any price for articles that please them.

YOUNG APPLE TREES can be easily protected from rabbits and mice by strips of wire netting. These may be rolled around a broom handle to make them cylindrical and thus keep their shape when sprung on the trunks. Netting 24 inches wide is large enough. If the netting is galvanized and if the strips are made large enough to allow for four or five years' growth, no further attention need be given the trees after once inclosed. The cost is only a few cents, but this is insurance as the time lost in replacing a tree is to be considered.

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My Pear Theory.

(See article on same subject in January number.)

REV. J. B. KATZNER, COLLEGEVILLE.

Since writing the article on pear growing last summer I have gathered a few more facts pertaining to my theory, and, as every little helps, I thought it best to add them.

A farmer living but three miles from our place told me that his father planted some pear seed, the seedlings of which froze back every winter. After some years the farmer transplanted one of these seedlings from his father's place onto his own farm south of a little

The lawn at St. John's University, Collegeville.

hill, where the snow gets two or more feet deep every winter. That pear-tree never froze back again and is now over ten feet high. This tallies exactly with my experience and may be explained the same way. Besides, pear trees protected against the fierce, cold northwest winds by a hill or trees withstand the cold a little better.

I have been corresponding with Mr. H. Knudson, of Springfield, Minn., the originator of the Compass cherry. He has had much experience in raising pear seedlings and succeeded last year in growing pears of the best quality from one of them. In a very interesting letter to me of Dec. 28, 1909, he writes in part: "The main thing is to secure seeds from the hardiest pears to be found to produce vigorous, hardy trees. The soil should be worked quite deep so as to give the roots of the seedlings a chance to go deep into the soil. This prevents

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the roots from freezing during the first winter. The seedlings should remain there at least two or three years to ascertain whether any or all will withstand the cold. They require that time for their roots to penetrate deep enough into the soil to prevent them from freezing. After that they should be dug carefully with all their tap-roots and transplanted carefully where they are intended to be grown permanently. Unless the seedlings are dug up with their tap-roots intact (and planted thus) they lose their vitality to withstand the cold. I find it to be the case that wherever the tap or main roots have been left the seedlings will resist the cold much better than where they have been destroyed."

It will pay us to consider carefully every word of the above gentleman. The first essential for pear raising, according to Mr. H. Knudson, is what I have stated in the first part of my theory, namely, hardiness, and, as he says, it may be obtained easiest from well ripened seeds of the hardiest kinds of pears. The second requirement is, that the tap-root go deep enough down into the soil to prevent them from freezing. Two or three years are required for that, where I said four or five years are necessary. And in fact, a well grown seedling pear of three years' growth attains a height of from four to six feet above ground and its tap-root goes down just as deep if not farther. If then it stands on a favorable place covered with snow, its tap-root does reach down below the frost line, where it can furnish water for the top all winter and is thus saved from freezing.

While I agree with Mr. H. Knudson in general, there is one point where we differ a little. He claims it all for the tap-root to go down deep, and I don't think it quite so necessary if the roots can supply water from a higher level. German nurserymen never grow pear seedlings with tap-roots. They grow a root system similar to apple-trees to facilitate transplanting later on. Yet these pear trees live more than a hundred years. When I transplanted my six pear seedlings, they had no tap-roots, but only a mass of roots like a common apple-tree. But where I planted them, there the deep snow of two to three feet kept the ground from freezing much, the roots were sending up water all winter, and the two hardy ones never froze back again. Of course in our climate where the ground freezes solid six feet down and more, it is imperative for the roots to go down that deep and lower else the trees freeze dry and perish. Mr. H. Knudson has succeeded in growing pears, because the tap-root went down to permanent moisture. For the same reason a certain Mr. H. Volkmer of Holdingford, Minn., has now growing a pear seedling that is about twelve years old and which he says is perfectly hardy. But where for some reason or other the ground does not freeze so deep, the long tap-root is not necessary. Now I do not want our members to understand this to be an infallible doctrine in pear growing. It is nothing but a theory that needs lots of time and trials, but I would be more than pleased if it were given to me to point out the right direction to success.

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Lumbering in Oregon and Washington.

RAYMOND ORR, ST. ANTHONY PARK.

Lumbering in a western mountainous state is greatly different from that of the plains country of Minnesota and the central states. The topography of this country, where lumbering is now gaining such a foot-hold, is of the mountainous type, some parts being large mountains and valleys while in other places it is not so rugged and mountainous, being more of the foot-hill type. It is a very rough country, cut up by valleys, canyons and gorges. Mountain streams and a few rivers seem to be the only means of water transportation in this region.

The soil of this region is of the gumbo variety, very dry and dusty during the summer months and very wet and muddy during the rainy season, which corresponds to our winter. The temperature of winter and summer does not vary a great deal. During the winter months, which include November to April inclusive, rain falls most of the time, ninety inches of rainfall being recorded for a single season.

There are a great many varieties of trees in our western states, but only the most important will be named in the following: The red fir (Abies magnifica) is one of the important timber trees, reaching a height 200 feet to 300 feet and from two to twelve feet in diameter. A single log sixty feet long and six feet in diameter will contain eight thousand feet of lumber, B. M. (board measure). Rings counted on the stump of a red fir showed its age to be 350 years. The stump of this tree was nine feet in diameter.

The white fir (Abies concolor) reaches a height of 250 feet, and two to seven feet in diameter. The lumber of the white fir is not so good as that of the red, and the latter is cut in larger quantities.

The western hemlock (Tsuga heterophylla) is rapidly becoming a valuable timber tree and is being quoted by its real name in the lumbermen's price lists, it having been previously given some other name or sold in mixture. This tree reaches a height of 200 feet, and two to six feet in diameter. At present it is not being cut; the trees are, however, being girdled so that they will dry up and can be floated. They will be lumbered in about three to five years.

The arbor vitae (Thuya plicata) is very important in this region, especially in the shingle industry. These trees reach a height of 100 to 150 feet, and a diameter of two to three feet. These trees are the only ones logged in this region, the Coos Bay country, in Oregon, which has been advertised as the paradise of the Pacific Coast.

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The land here is very heavily timbered, averaging 75,000 to 150,000 feet to the acre, the predominating species being red fir. The underbrush is very dense, ferns being six and seven feet high, which seems hardly possible for an eastern man to believe. Throughout this region there is a great deal of fallen timber. A good cruiser cannot average more than a mile a day and often a great deal less. In many places the traveling is so bad that one must cut his way through this western jungle. On account of this, logging here is a very difficult proposition, and many difficult problems confront the lumberman. The camps of this region are owned by the C. A. Smith Lumber Co. of Minneapolis, which is incorporated under the name of the Smith-Powers Logging Co. Five camps are logging the timber in this region, and acre after acre of land is being cleared of the virgin forest.

The camps are situated in the canyons and valleys, and a main line of railroad with adjoining spurs leads to these camps and connects the region with the Coos River. The camps are up-to-date in every way and can be moved on flat cars from place to place.

The lumbering operations of this company are typically modern and western. Steam logging is all that is used; no horses, oxen or mules are seen. Each camp has two yarding engines, which bring the logs for a distance of 2,000 feet to the main skidding yard, which is located on a high hill, the logs having been brought up this hill from the valleys and canyons. At two spurs on the main line are two donkey engines which bring the logs, by means of a cable one and one-half inches in diameter, a distance of 3,500 feet to the main landing. Here the logs are loaded on cars by means of a steam loader. Each car is limited to 7,000 feet B. M., and before the car leaves the spur a scaler must go over the logs and see that no more than the limit is loaded on one car. I will describe briefly the handling of these logs by the donkey engine, which works like the yarder.

A large tree is selected 3,000 feet away so that the cable will pass through the fallen log district. Two cables are then stretched to this tree, one large cable to which the logs are attached and hauled in, the other for the purpose of hauling the main cable back into the woods. On the donkey engine there are two drums which wind up the cable, one to haul in the logs, the other to wind up the cable which pulls the main cable back into the timber. The logs are fastened to the main cable by means of chokers, pieces of cable about twelve feet long fastened to the log and then hooked onto the end of the main cable by men known as rigging slingers, who handle logs in

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the skidding yard, the foreman of the rigging slingers being known as the hook tender. As the logs proceed to the loaders a man known as a chaser accompanies them, who sees that the path is clear and gives warning of an obstruction. At the skidway the logs are loaded by the two loaders, who fasten the hooks on the logs, and the engineer on the loader places them on the cars.

We will now leave this part of the operation and go to the most important, that of the men in the woods, who fell the trees and get them ready for the yarding crew. Two men work together in felling the timber, one of them being the head feller, the other his assistant. The tools carried by these men are the following: two saws, eight wedges, two sledge hammers, a bottle of oil and a platform. The oil is used on the saws, due to the large amount of pitch. The platform is a board with a steel point, on which the men must stand when they must saw from six to eight feet above the ground. The felling of six to eight trees is a good day's work. After the trees are felled a chief bucker marks the place where the trees are to be cut. The swampers clear the trees of the branches, and the buckers then cut the tree into logs varying in size from thirty to forty feet. The tools of the bucker are the following: Two saws, three files, a bottle of oil, four wedges and an undercutter.

A man known as a sniper rounds off the ends of the logs so that they will slide easier. After his work is completed the logs are ready for the yarding crew, who snake the logs by means of the yarder to the main skidding yard. This yarder is similar to, but smaller than, the donkey engine.

We will now take up the railroading of these logs to the river. The company has a railroad about four miles long, which connects the camps with a railroad owned and operated by another company doing a transportation business in this region. This company takes charge of the cars on their line and hauls them to the Coos River, where they are rolled into a sort of dam. The Smith-Powers Logging Company again take charge of their own logs, and they are formed into rafts bound together by chains. The company has eight very powerful launches, which tow the rafts to the sorting boom at the mill, a distance of six miles. This boom is so arranged that logs of various sizes are put into various ponds, which lead by channels to the log carrier at the mill, thus enabling various sized logs to be easily handled and found.

This mill is the most modern and up-to-date mill in the world, turning out 60,000 feet, B. M., of lumber in ten hours. Everything in this mill is done by steam, the men employed doing very little work.

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They really have little to do except handling the levers and to see that everything runs smoothly. The mill is equipped with the following saws: Two carriage saws that saw both coming forward and going back, two gang saws, and a trimmer of twenty-five saws operated by two men.

The sawed lumber is both kiln and air dried, and is then put in piles or on small cars. The lumber that is put in the cars is loaded on the company's boat, the "Nan Smith," one of the most up-to-date and largest lumber vessels on the Pacific Coast. It is built of steel and is equipped with apparatus for loading and unloading by steam. The capacity is two and one-half million feet, B. M. Most of the lumber is shipped to San Francisco and Portland, while a great deal is carried by foreign vessels to distant ports.

For furnishing the camps with supplies a large ranch is maintained by the company. On the ranch vegetables of all kinds are raised in season. A large herd of cattle are taken care of and managed by the head-rancher. A great deal of the large supply of necessary food of the camp can be furnished at a very little cost. This ranch is handled well by six men, at an expense per man of $35 per month and board. The land when cleared is well adapted to agriculture. Fruit raising and dairying are the principal pursuits engaged in, and they meet with marked success.

Now in regard to forestry by the lumber companies of this region. Mr. Weigel, of the Forest Service, was in Oregon all summer looking over the ground in preparation for making a plan of a "forest management" for this region, principally for the purposes of reproduction and a more conservative method of lumbering. Something must be done for the saving of our most useful and natural resource, the timber supply. Trees that have taken centuries to grow are in a single hour destroyed for a useful purpose. Other trees must be started to take their places, so that the forests of the United States will be a permanent resource and that posterity, which should be given as much consideration as ourselves, will not have to face a timber famine. This work of replacing the natural forests should be taken up not alone by the United States Government but also by private companies and individuals. The lumber companies are beginning to realize this more and more. The C. A. Smith Company are doing it, and it is to be hoped that every lumber company in the United States will follow their example and consider the reforestation of their lands along with their lumber operations.

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Our Duty to the Landscape.

M. O. NELSON (LATE OF MINNEAPOLIS), TROUTDALE, OREGON.

Doubtless the majority of the people to whom I am talking were born and brought up chin-deep in the landscape, with landscape to dig out, burn up and some to throw at the dog. Landscape stood as a bar between us and a crop of potatoes; landscape held a first mortgage on everything in sight. The man who had spent his time mussing up the landscape sold his place as an "improved" farm, and so drew dividends for his vandalism. In those days if a farmer wished to build his pig pen between his door and the public highway, it was none of the public's business. If the public did not like it the public could turn its eye and nose the other way, whip up the horse and go about its own business. If the farmer's wife chose to fling her slop water and potato parings plump into the middle of the landscape, nobody ventured to say her nay, for almost everybody was doing the same thing. But these were in the days of long distances between settlements; in the days of raw and unhampered individualism; in the days, too, when we had inherited but little from our fathers in the way of respect for landscape or in the form of landscape improved.

The times of this ignorance God winked at, I suppose, though even that did not save us from most miserable loss of God-given landscape, spoiled by the hand of dull-witted and thick-skinned men. Today if we were but awake enough to know it, landscape is property, public property, that is, your property and mine. We have rights in the landscape beyond our line fence, because, for one thing, the appearance of the landscape beyond our line fence has to do with the market value of our property. This is putting it in its crudest and most material form, because in that form the fact is most generally appreciated. To put a finer and more valuable point upon it, you have rights in the landscape because it has a hand in shaping your soul and in measuring your happiness in life.

That landscape is a tangible, taxable, marketable asset, I know at first hand. I know it is taxable, for when I planted a good looking shrubbery and flower garden about my home the assessor slapped an extra $750 assessment upon it for taxation purposes. That landscape is marketable I can prove, because when the Park Commission of Minneapolis began dredging the Lake of the Isles, making a scenic lake out of an old marsh, the adjoining residence property values jumped skyward, in many cases three hundred per cent.

We are learning now, with reasonable speed, that it is a loss to the pocketbook to mar the landscape, and a few of us know that it is a loss to the soul. This feeling is growing in village and country, though

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there the old fierce desire for individual liberty that drove our most valuable ancestors over the seas is yet in the blood. Co-operation and

Screen in front of barn at late residence of Mr. M. O. Nelson.

its corollary, giving up a part of our individual rights, have not yet taken hold of people who live at long arm's length from each other. Where men rub elbows, and sharp elbows dig sensitive ribs, where people are

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packed into brick pigeon holes and are forced to breathe each other's breath, they learn to yield personal liberty for the public good. In such congested spots the value of landscape is first appreciated. It is there that the idea grows that landscape is worth money. It was conditions like these that first brought forth park commissions and levied park taxes.

It is an end earnestly to be prayed for, that the rural and village population of our country will not have to pass through this stage of unwholesome congestion before they learn the value of landscape. Not all of them will, as we know by observation.

Cleanliness, beauty and good morals are contagious just as are disease and vice. When as a lad I used to haul wheat to town from the backwoods fifteen long, slow miles, I noted that I was nearing town when I began to pass painted houses and barns. Regard for the landscape will radiate from the city in the ratio that it exists there, and it will radiate from your own home, wherever you live, in like ratio. Your good example may be a long time catching, and beauty in your neighborhood a long time coming, but so is the millenium. That is not to say that both are not worth working and hoping for. Because our neighbors will not co-operate, because they will neutralize much of our beauty with their ugliness, is no reason why we should not beautify. It is so much the more up to us to hold up our torch. "So shines a good deed in a naughty world."

We may find much beauty in any Minnesota landscape. I have seen this state from the rich prairies of the south to the muskeg swamps of the north, and I have not yet within our state lines traveled beyond the border of Minnesota beauty. If the Almighty has done so much through the centuries to make this state pleasant to look upon, ordinary gratitude would suggest that we refrain from spoiling his bounty, and that we do a little to add to it. For in this line of endeavor we are honored in greater measure than in anything else in the material world, by being made "workers together with God." We can make or mar our landscape, and in the course of a lifetime we can do large work for good or evil in God's great panorama.

I would not speak of our duty to the landscape as the greatest force that constrains us to plant and prune, water and weed, according to art. I prefer to present this as a privilege. Once you have experienced years of this fascinating work, you take in more pleasure through the eye from form, color, light, shadow and composition in one minute than uneducated you took in a month. This is living larger and broader. Making landscape also adds to length of days, while it adds to their breadth. To be a fit model for others to copy, to be an inspiration to other people to improve their lives, is one of the rare joys of earthly life—I dare to believe it is one of the joys of heaven.

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Improvements for the State Fair.

A TALK BY J. M. UNDERWOOD, MEMBER OF STATE FAIR BOARD.

Madam President, Ladies, and Gentlemen: There has been a thought awakened in my mind in regard to the state fair, upon which I should like to speak for a few moments. Mr. Swanson has urged upon you and upon every one interested in the state fair the importance of developing floriculture about the fair grounds, and now we have just listened to this very able talk in regard to the possibilities of parking and developing our resources in beautifying the grounds at the state fair. So far as floriculture at the state fair is concerned, we must confess it has been almost entirely neglected; the florists have never had any place to exhibit their flowers and plants, and the premium list has never been made up with a view to bringing out a display of the floral beauties of our city and our state. Almost everything has taken precedence, but I assure you the trouble has not been because the managers of the agricultural society have not wanted to do this. The trouble is the state fair board has not the money with which to do things, and I want to make you understand, and I want every one in the state to understand, the needs of the state fair. I think you will agree with me that if you were going to farming you would first have to buy a farm. You would run into debt for it, or you would have the cash to pay for it, and after you had your farm you would not be situated to accomplish very much unless you had the proper equipment. That is just the situation we are in at the fair grounds. We have not the equipment, and it is necessary for us to raise more money to provide the necessary equipment. It takes a lot of money to construct buildings. The florists ought to have a building to cost $50,000, but how are we going to get it? The state fair board cannot furnish the money to put up the building with; they haven't it. The agricultural department ought to have a building costing $150,000; they haven't it, because the board hasn't the money to put into it. The federation of women's clubs ought to have a building costing from $30,000 to $50,000, but there is no money available for it. You heard that very able address by Mrs. Jones yesterday, and all who heard it would certainly say that if the managers of the state board did not furnish such a building next year, they ought to be turned out of the board. Other interests are situated the same way. The bee-keepers ought to be provided for, the department representing the state fish hatchery has too small a building, and it ought to be more suitably provided for.

The fact is the state legislature ought to give to the state fair managers $1,500,000 with which to put up buildings and furnish the equipment necessary to go with the buildings, and all you men and women that are interested in the state and the state fair, if you will undertake to push this matter, we will get what we want more quickly. We have been making from $50,000 to $80,000 a year net profit on the state fair almost every year since I have been on the board —for the last fourteen years. It takes a lot of money to keep up the grounds, to keep the buildings painted and in repair, and we have put in thousands more money in actual improvements than the state legis-

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lature has ever put in. For example, the livestock pavilion was built, costing about $130,000, of which the state legislature gave us $50,000, and we put in the balance of $80,000 from the fair earnings. Now we would be glad if we had the money to construct a building for the florists. This society ought to have a whole building. We occupy only half of the building for horticulture, of which we could have the whole. Agriculture has only a portion of that building, and for several years it had only one-quarter of it devoted to that purpose. The rest of it was given over to horticulture, floriculture and apiculture, and then agriculture, which is the foundation of everything that exists in the state, has had only one-fourth of the building. We have succeeded now in giving them one-half of the building. We introduced a bill last winter asking for a new building for agriculture. We want $150,000—$200,000 or $300,000 would not be too much to put in the agricultural department, because, as I claim, agriculture is the basis of all the life and wealth and prosperity that exists in the state. The products of the soil, corn, wheat, oats, rye, barley, grasses of all kinds, ought to be included and could be made one of the grandest exhibits of the fair. Now when you get your minds made up and the state legislature gets its mind made up that we ought to have this equipment, then we can take our earnings and give them to the exhibitors in the form of premiums, reserving enough only to pay the running expenses of the fair.

These are the thoughts I have in my mind after being on the board fourteen years and taking a very active part in the management of the fair. This last year we bought twenty acres of ground that is adjacent to the state fair grounds and which adjoins the state agricultural school. This land is marshy ground that we are dredging out, and we expect to make one of the most beautiful spots of it to be found around the Twin Cities, so that next year you will be able to take a launch at University Avenue and sail right up into the fair grounds. These grounds are to be ornamented with flowers, shrubs and trees, and we propose to make them as beautiful as it is possible to make them, and all we want is the support of the citizens of the state in the way of furnishing the money to do these things with. Mr. Swanson knows, I believe, that the management of the state fair is more than anxious to give them a good building, and thus give the florists and the landscape gardeners a chance to develop the state fair along those lines. We already have a plat made by landscape architects that will develop those grounds along beautiful lines, and upon which we can work for years to come. I am simply taking this time to plead with you on behalf of the state fair board for sufficient means to furnish this equipment. As I said before, no farmer going into the business of farming would think of carrying on his farming operations unless he had the proper buildings and other equipment with which to do so. It is the same with the state fair. We cannot do as we would if we had the money with which to bring about these results. (Applause).

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Premiums at the State Fair.

A DISCUSSION.

Capt. A. H. Reed: Before we close this meeting, I want to ask who is the father of this premium business on fruit, who designates the premiums, you, Mr. President, Mr. Latham or the executive board. I am not satisfied with the way premiums are offered, on so many varieties—and there are some other things I don't like either.

The President: We are always looking for chances for improvement; you can talk to any member of the executive committee about that. We will ask you to make any suggestions you may see fit to make, and we shall be very glad to receive those suggestions. If you will criticize that list in writing, we will do what we can to meet your views.

Capt. Reed: I would like to get the expression of this meeting as to whether the members think there should be premiums offered on so many varieties.

The President: Name a poor variety.

Capt. Reed: Well, I would not throw out the Peerless. I would throw out some that are not as good as the Peerless,—some of those small things that are exhibited here.

The President: Would you not offer premiums for crabs? If there are any varieties that ought to go in there, we want to put them in.

Mr. Elliot: I have been on the agricultural board for a good many years—I served a long apprenticeship, and have been in horticultural work for a good many years. The way these lists are made up is as follows: A list is presented to the secretary of the horticultural society. He confers with the exhibitors, then refers that list to the executive board, and they make such corrections as they deem fit. This is then passed on to the agricultural board, and they take it or refuse it as they see fit. That is the way the list is made up. We have invariably tried to get the best and most popular varieties grown. There are many varieties coming into use in our state that we are satisfied ought to go on the list, but we have not been far enough along in testing them to decide whether they are worthy at the present time to go on the list. The list for the coming year will be handed to Mr. Latham, and he will confer with the board, and will then send it out to the growers also. Last year we wrote to all the exhibitors as to whether they had anything to suggest to put on the list—and that is the way the list is made up.

The President: In the west they offer prizes for a few commercial varieties, but we do not want to lose sight of the fact that we are today in our swaddling clothes so far as apples are concerned, and through these many varieties of apples that come to our fair we shall eventually be enabled to build up a system of pomology of our own. The eliminating process is going on all the time, and we can afford to be more severe when we get what we want. There are many growers that would like to compete in the Anisim class. That might come in for some criticism. It is a small apple, but a good many people

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are growing it, and it is added to our exhibit. We are trying to work these things out in the best manner possible, and it seems to me we ought to go along as we have been going, but we would be glad to receive any suggestions which might prove of value in this matter.

Capt. Reed: I would suggest we make the premiums larger, and offer premiums to our members who make the largest and best exhibits.

The President: We have done that.

Capt. Reed: In regard to the Hibernal, as much as I am in favor of the Hibernal, I would set it aside because we know we can produce that in any quantity, but the man who has only a few or a little of this or a little of that I do not think should be given a premium. I think a man who propagates a new variety or who grows such standard varieties as the Jonathan, Grimes' Golden, Baldwin, and Rhode Island Greening should be recognized, but set these measly little things aside.

The President: If any one will produce a Jonathan in Minnesota, he will get a thousand dollars.

Mr. Busse: Yes, I believe that, but it will be a thousand years before he gets it. (Laughter).

Mr. C. S. Harrison: Are not our crabs valuable?

The President: The best apples we have are crabs.

Mr. Harrison: There is money in crabs like the Transcendent. The Wolf River is a big apple, a handsome apple, but no one wants to grow it or eat it when it is grown.

Growing Rhubarb in Winter and Summer.

LUDVIG MOSBAEK, GARDENER, ASKOV.

I have grown rhubarb more or less since I was eighteen years old, or for the last thirty-five years, in Europe and America—at one time as much as five acres. I know something about rhubarb, but will readily admit I have more to learn yet. In my first attempt I remember yet I reasoned that it ought to be planted quite deep. That was a mistake. From 1892 to 1904 I cultivated about fifty-two acres in Chicago as a market gardener. In 1896 I decided to force a few rhubarb for my own use. I dug a few dozen clumps in the fall and put some under a bench in my hothouse about November 1st, in the hope to have my first rhubarb about Christmas. I figured to put in a few more during winter to keep up a supply, and those I left outdoors on top of the ground where they got thoroughly frozen. It came to Christmas time and New Years without any sign of activity on the rhubarb under the benches. However, I put in a second lot of frozen roots, and, to my surprise, from them I had a fair crop in three to four weeks, while those planted November first commenced a sickly growth about April. There I learned something important.

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I have not been in California or any of the Southern States, but I am told they cannot grow rhubarb there successfully because they do not have enough frost to make the plants dormant and give them a needed rest. Whether that is true or not, I confess I do not know. However, I have not seen southern rhubarb offered in Chicago or any other northern markets.

After that little experience in 1896 I planned to grow rhubarb from one acre of roots each winter. I erected a house specially for that purpose, on the north side of my greenhouse shed, thirty-six feet by eighty feet with five feet post, outside covered with tar paper. There were no windows, and no light whatever was admitted.

This house I first used as a storage for celery up to Thanksgiving and towards Christmas. As soon as I could have my rhubarb roots well frozen I commenced hauling in those and packing them as close together as the roots would allow, filling in between the roots and about two inches on top with sandy soil and giving them a good watering to settle the soil compact around the roots.

Rhubarb after being thoroughly frozen will commence growing at a temperature of thirty-five, or just above freezing. I had a run of hot water pipes from the greenhouse boiler on the outside wall around the house which would keep it from freezing and could raise the temperature to fifty or sixty degrees.

My experience is that at a comparatively low temperature I can produce the heaviest crop, and consequently you can grow rhubarb in your root cellar, house cellar or any dark place that will keep fairly free from frost. You cannot benefit the rhubarb under forcing by applying manure—they cannot digest it; it will only tend to decay the roots. The product is dependent on the nourishment stored in the root before it is put to forcing, and the forcing will exhaust the vitality of that root so it is worthless for future planting. That shows it is a very expensive crop to produce. However, I found it a good paying crop.

In marketing I had the stalks tied in bunches two to three in a bunch; twelve bunches tied together were called a dozen and sold for seventy-five cents and down, according to market condition, or it sold at fifteen cents per pound from New Year and lower later in the spring, all at wholesale, either to commission houses or direct to the retailers. I estimate the average yield from an acre of roots three or more years old at four or five pounds each, or about 10,000 pounds from 2,500 roots.

If I have succeeded in my effort to interest you in the forcing or winter growing of rhubarb, the consequent question will be how to

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keep up a supply of roots for that purpose. There are two ways to increase your stock, either by seed or division of roots. I have no doubt but that if you can get divisions from good old stock it is in every way the best. I have tried both quite extensively and I have found that I have more trouble with seed running from seedlings for a number of years, even in the forcing of four to five year old plants, than from stock grown from division of old plants, which reduces the crop of leafstalks considerably.

If you can procure good old stocks of a variety with heavy stalks and well colored it will pay. Divide by cutting the old clump to pieces

Ludwig Mosback and family.
A life member living at Askov, Minn., Pine Co.

with one or more eyes, which can be done from early spring until August. For a permanent field culture plant four feet apart each way, which will require about 2,500 plants to the acre. Prepare the ground by a good coat of manure and plowing quite deeply. You cannot put too much manure on; the rhubarb will take care of it and pay for each additional load. Do not cut any stalks the first year, as that will weaken the growth and lessen the crop the succeeding years. Give good cultivation and cut all seedstalks as soon as they appear.

If grown specially for forcing purposes you can plant about three feet apart each way, and by heavy manuring and good cultivation you can have suitable roots in two to three years. Do not pull any stalks

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from them the summer previous to forcing as they need all the vitality they can store up during a full season's growth.

For an early field crop, plant on rather light sandy soil on a south slope and start your cultivator as soon as the soil will allow. Do not be afraid, a late frost will not hurt them.

A field of rhubarb in good condition will produce from six to ten pounds in one or two cuttings from each plant, or from 15,000 to 25,000 pounds. The earliest cut will generally bring five to eight cents a pound, going down to one cent and one-half cent a pound, at which figure it still is a paying crop.

Field grown rhubarb is generally marketed in boxes, holding fifty pounds each, and is consumed by the carload in the larger cities, besides what is grown by nearby gardeners.

If you grow rhubarb on a large scale for forcing it is quite a problem to dig the roots and get them up in good shape without breaking off too many roots. A large grub plow drawn by four horses will do it. I have had the best result with a tree digger such as is used in the nurseries. Being located in Pine County, Minn., only three years, clearing and grubbing cut-over timber land, I find rhubarb doing just as well, if not better, than in Chicago. By next spring I will have one acre from divisions of old plants I brought with me, which I have grown for the last eighteen years, and I have some dug and ready to put in my cellar this winter.

Mr. Seth Kenney: Did I understand you to say that after the roots are frozen, they would not be good for the second year?

Mr. Mosbaek: The frost would not hurt them, but freezing will. They will grow, but it does not pay well.

Mr. Kenney: Then you would not advise using the plant again.

Mr. Mosbaek: No, it does not pay.

Mr. Kenney: These plants you expect to use for winter—do you take them up before winter?

Mr. Mosbaek: Yes, and leave them on top of the ground.

Mr. Schutz: Do you have your cellar dark?

Mr. Mosbaek: Yes, no light whatever.

Mr. Schutz: Do you water the roots in the cellar?

Mr. Mosbaek: Only keep the soil moist.

Mr. Schutz: You just keep them moist, you do not soak them.

Mr. Mosbaek: Yes, sir.

Mr. Schutz: You plant them in boxes?

Mr. Mosbaek: No, anywhere.

Mr. Schutz: Plant them close together?

Mr. Mosbaek: Just as close as I can.

Mr. Schutz: Simply leave them out-doors until you want to grow them?

Mr. Mosbaek: Yes, no dirt on the outside.

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Mr. Schutz: And as soon as you want them to grow, you take them in a dark cellar and put them in the ground?

Mr. Mosbaek: Yes, if you give them light they will grow leaves instead of stalks. If you ever try forcing rhubarb, you will find it to be the finest thing in the world; it is as good as an apple and as brittle as glass.

Rev. Harrison: I want to say a word about a new vegetable, and that is the Baldwin horseradish. We plant the roots the size of a finger, and they come to weigh a pound.

The President: I had some experience with pie plant. I have a neighbor who sells from seven to eight hundred dollars worth every year. He gave me a bunch one day to take home. He had covered his building with tar paper, and when the rhubarb was cooked, we could not eat it because it tasted of the tar paper. (Laughter.)

The Effects of the Late Freeze.

FRED HARALSON, EXPERIMENT STATION, ST. ANTHONY PARK.

The first freeze, which occurred April 16th, was very much unexpected, and, as a result, the growing crops and all forms of growing vegetation were more or less injured. The plums seemed to suffer most, because at the time of the freeze they were in full bloom. Although a few of the early-blooming varieties of apples were injured, but most of them escaped injury, insofar as they were not in blossom. Although the frost had a damaging effect to some extent, yet owing to the cloudy, snowy weather preceding it, it caused far less damage than it might have done had clear weather preceded it. As a result, all the lilacs, hydrangeas and similar shrubs were very little damaged, as was the case with the shade trees and smaller forms of vegetation. But this the first frost did have its effect to a certain degree. It checked the growth of the trees, shrubs, etc., and caused a delay in the maturation of the fruit of the tree, and also held back the young shoots that had already started. But as a whole, it did little damage, except to the plum trees and to a few apple trees. However, it killed the growing asparagus; but as the dead shoots were soon replaced by new ones, its effect on this crop was but small, and in a couple of days after the frost the asparagus crop was as heavy as it ever was. Although this frost did most damage in the low, sheltered places, it also affected to a certain extent the progress of vegetation on the higher places.

Between the first and the second frost, which occurred on April 22nd, the days intervening were warm and clear, and regular summer weather prevailed. All signs of frost were thought to have disap-

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peared. But the renewed hopes of the general public were very much shattered, as on Friday afternoon, April 22nd, the wind changed to the northwest, and cold, shivering breezes from that direction seemed to foretell what was in sight. The frost was heavy and damaging and seemed to be very general, and not only Minnesota suffered, but several adjoining states seemed to get a touch of it. The injury done was due not to the frost alone, but also to the cold, windy, stormy weather of Saturday, which forced itself through the branches and limbs of the trees and shrubs, and also smaller forms, and by breaking and chafing did great damage. The plum crop, which was heavily damaged by the first frost, was now totally destroyed. The apples suffered severely, but, unlike the plums, were not totally destroyed, as some of the later varieties were not yet in bloom; and, also, some of the earlier varieties were afforded protection from the cold, driving wind.

The currant and gooseberry crops were damaged to some extent by the first frost, while the second frost badly, if not totally, destroyed them, as they were in full bloom at that time. As the grapes had just been uncovered, a number of buds were still dormant and may produce fruit; but even then, the crop will probably be a failure. The raspberry bushes were little affected by the frost, and as they are late-blooming, it is uncertain what damage has been done to the fruit. The blackberry bushes were not injured and are likely to produce a good crop. Strawberries that were mulched late were not far enough along to be damaged, and the crop should be large.

Among the shade trees the oaks probably suffered the most, as in that stage of growth an oak tree is as tender as a tomato plant in a greenhouse, and the flowers and small shoots which had appeared were destroyed. Not only were the oak trees severely damaged, but also many others, such as the butternut, soft maple, hackberry and ash. The frost and wind combined left this class of trees in a very bad shape; as in the case of the oaks all the small shoots were destroyed, and the growth for this year will have to start anew, thus making the leaves very much later than they would have been had they not been set back. The hard maple, American linden, willows, elms and white birch did not seem so susceptible to the cold as did the preceding trees, although they, too, were damaged to some extent. The frost did not seem to have any effect on the pine, cedar and tamarak.

Of the ornamental shrubs, the Alpine and Missouri currants, buffalo berry, Russian olive, caragana and Tartarian honeysuckle were

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very little damaged, while the high bush cranberry, syringa, lilac, spiraea and many other shrubs were very heavily damaged, except where protected from the wind.

The perennials, such as peonies, tulips, iris, phlox, larkspur, etc., were frozen, some lying flat on the ground; but the sun and clear weather revived them.

The horticulturists were heavy losers, as were the farmers and gardeners throughout the state, and millions of dollars worth of damage was done by the frost, which was the greatest setback to the early vegetation that Minnesota has ever known.

Fruit Prospects at Lake Minnetonka.

ROLLA STUBBS, FRUIT GROWER, LONG LAKE (NORTH SHORE).

March, 1910, was the warmest March for fifty years, since 1860. The preceding winter closed in with a good covering of snow before the ground froze. Consequently the ground never froze all winter, which was bad for apple trees. The warm weather in March forced the fruit buds forward. On the 10th of April strawberry buds not covered and plum trees commenced to bloom. On April 13-14 came the first hard freeze, 10° below freezing, which killed the early bloom. On April 23rd it was 12° below freezing here, and the wind blew thirty to forty miles an hour. On the 24th. came a snow which helped the fruit buds from not being injured so much from the freezing. Had the snow been shoveled away from around the trees so the ground could have frozen deep hundreds of bushels of apples could have been saved by keeping them back.

My farm, according to government survey, is next to the highest location of any point around Lake Minnetonka or in the county of Hennepin, hence the trees have good drainage and, laying close to the lake, are protected from heavy frosts or freezing. I have near 1,000 bearing apple trees ranging in age from fifteen years to over forty years old. All apples trees and plum trees were never heavier in bloom, and Transcendent apple trees forty years old that had not borne much fruit for twelve years were loaded down with blossoms. One hundred and fifteen plum trees were one mass of blossoms, of the following varieties: Comfort, Mankato, Rollingstone, Gaylord, Emily Wilfort, Paul Wolf, Stoddard, DeSoto, Rockford, Hawkeye, Cheney, Forest Garden, Weaver, and one or two other varieties not known. The last two years I have had good crops of plums, and people came for six miles around to get some, as there were not any other plums

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around. Last year we got $2 to $3 per bushel at the orchard—some of the finest plums that ever graced a table.

I have carefully examined my fruit trees up to this date, May 12th, and make the following estimate of fruit yet on trees: Wealthy, 70 to 80 per cent good; Duchess, 30 per cent; Patten's Greening, 50 per cent; Virginia crab, 25 per cent; Malinda, 90 per cent; Northwestern Greening, 50 per cent; some other varieties 30 to 40 per cent good. All other crabs, plums, cherries, pears are gone.

I have six acres in orchard in young trees fifteen years old lying up high. The snow blew away from around the trees so the ground froze, and some Wealthy are now blooming. About three-fourths of all my trees are Wealthy. I have some forty varieties but mostly Wealthy. On May 1st ice froze one-half inch thick, and it frosted heavily on the 2nd. This killed almost all the strawberries out in bloom, but the buds that were covered good and kept back are now getting to be in full bloom. On the 11th and 12th of May it frosted here, but it has not killed the bloom, and if we can get rain soon there will be half to three-fourths crop of strawberries on our farm. All beds in low ground are too badly frozen to get much returns. My seedling trees, forty-five years old, have been full every year. The bloom all killed. The seed from these trees we brought here in 1858, two or three varieties. They proved hardy and are good trees thirty feet across tops now. Currants and gooseberries all gone. Raspberries haven't put out their stems for fruit yet. They look dry and show the effect of the cold and dry weather, but with some rain we can expect a reasonable and average crop.

In the Garden.—With the currant and gooseberry I recommend fall rather than spring pruning. I commence as soon as the leaves have partially fallen, trimming out all drooping branches to encourage an upright growth, all dead and dying wood, and all sprouts except two or three of the strongest for renewing the fruiting wood. In removing the sprouts I prefer pulling them rather than cutting them off close to the ground, and where they do not come off easily with a good, vigorous pull, I remove the soil at the base of the sprout and cut it off as low as possible. After the bush is trimmed and all grass, roots and weeds removed, mound up a little, covering all exposed rootlets. This operation serves as a fall hoeing, and is much easier done then than in the spring, when the grass and weeds have more strongly fastened their roots in the ground. This pruning away of all surplus wood and sprouts in the fall gives added strength to the roots for sustaining and stimulating that part of the bush remaining.—Wyman Elliot.

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The Late Frost.

PROF. S. B. GREEN, ST. ANTHONY PARK.

Nearly every year some sections of our fruit growing districts are troubled with late frosts, which do more or less damage; but this year the injury is more complete than any year of which we have records. It seems incredible that on the 25th of April ice a quarter of an inch thick should be formed in central Mississippi, and yet such is the fact.

In the wide section from which early strawberries are shipped in large quantities, there would be tremendous loss to the fruit growers, who seemed just ready to gather the final returns for their labor. The apples, plums, peaches and cherries are destroyed over a wide area. It is certainly very unfortunate to have a spring start so early and to have the months of April and May reversed.

In looking over the effects of the freeze, I notice that the plants naturally divide themselves into what we know as "frost-hardy" and "frost-tender" plants. The oaks and ash, for instance, have foliage that is very tender, and this was killed in the first freeze. The maples, elms, willows and poplars were scarcely injured by the first freeze, even in northern Iowa, Minnesota and Wisconsin; but the second freeze, which was accompanied by a high wind, was very hard on the foliage, because it was battered about while still frozen. It is not uncommon to have the shoots of asparagus frozen off in the spring, as they are very tender; but it is extremely unusual in any of the northern states to have pieplant hurt by a freeze, but this was the case over a large extent of country in the northern portions of the Mississippi Valley, and, of course, with it went a great many other plants. The currants and gooseberries were also seriously injured, and probably hopelessly destroyed, over a large area.

There never was a time when the general public was more interested in the effects of a late freeze than now. As a rule, any report that the fruit crop has been damaged by frost was taken with a little salt and looked upon as an effort to boom prices; but this time it is generally realized as a calamity, in which all must bear a portion of the burden—the consumer as well as the producer—for there can be no question but what such a very general destruction of the fruit and garden crops will mean a serious deprivation to hosts of consumers and will materially increase the cost of living.

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Retarding Fruit Plants.

PROF. S. B. GREEN, ST. ANTHONY PARK.

The recent frosts have brought to light many suggestions as to the way in which injury from them may be avoided. Among the most common is the statement that if trees are mulched, so as to hold the frost in the ground, they will be retarded in blooming, and thus, perhaps, escape injury from the late frosts. In one of our daily papers, a statement was made that a certain farmer hauled ice from the lake and put it around his apple trees, and in this way retarded their blooming period, so that they were not injured by frost; in fact, he was far-sighted and felt that the warm weather was likely to produce just the disastrous results which have come to us. This matter attracted considerable attention, and the other night I was called up by a reporter for one of the daily papers, and asked what I thought of it. I said that such statements were common, but there was really nothing in them, so far as it applied to fruit trees, and that I had frequently denied there was anything of value in such practices. The next morning I found my name in conspicuous black type, and the statement that I had denied that which had been asserted by an honest farmer and by a professor of physics in the high school. Nevertheless, I am sure I am right in this matter, and that those who reported having had success in this way have been misled and have probably mixed up the relation of cause and effect.

It is well known to all botanists that one portion of a tree may start into growth without regard to the other portion; for instance, in the old cold graperies of fifty years ago it was customary to plant the vines outside the graperies and bring them through the walls into the house, and frequently the roots would be frozen when the vines were started up inside, and the tops started into growth entirely independent of the roots. It is well known that the branches of plums, peaches and cherries may be brought into the house in winter, and will flower independent of the root, thus showing that the portions of the plant start into growth according to the temperature with which they are surrounded, rather than the temperature which surrounds the roots.

Nurserymen in the northern states, especially in Minnesota and the Dakotas, where the spring weather comes on quickly, occasionally find their trees in nearly full leaf with the ground frozen, and they are unable to dig the trees.

I could cite many specific instances where the mulching of the trees to keep the frost in has been tried, but unsuccessfully. In the case, however, of strawberries, where we can cover the whole plant with straw, we may keep the plants back for a considerable time, and thus prevent their blooming too early. The same is true of raspberries, and even gooseberrries may be covered with earth and be retarded in the same manner.

I dislike to disagree with some of my good horticultural friends in this matter, but I feel that they are in error somewhere, and that a little careful study of the subject will show them that there is little foundation for practicing the methods suggested for retarding the blooming of fruit trees.

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SUMMER MEETING, 1910.

A JOINT SESSION OF THE

Minnesota State Horticultural Society and Minnesota State Rose Society

Will be held Thursday, June 23.

The regular summer gathering of the society will convene at the State Experiment Station at St Anthony Park. (*in Armory Hall*) and the time is set for this meeting at as near a date as can be arrived at as likely to meet the strawberry season at its best in that vicinity.

DEMONSTRATION IN SPRAYING.

At 10 o'clock in the forenoon will be exhibited a demonstration in spraying fruit trees, etc., using the same apparatus that would be used in the orchard or fruit garden. This will be conducted by experts, and in connection therewith short talks will be given showing the proper uses of these implements, spraying mixtures for various purposes, etc. Much care has been taken in working up this feature of the meeting by Prof. A. R. Kohler, at the Experiment Station, and every member who is interested in this work should plan if possible to be in attendance promptly at the hour named. Machines from different firms, including a power sprayer, and a number of barrel, knapsack and other small outfits, have been secured for this demonstration.

PREMIUMS.

As will be noted on the next page, the premium list has been revised and considerably changed and somewhat enlarged from previous years, and especially on account of the joint session with the Rose Society in the premiums offered for flowers, and it is hoped that every person attending who has anything to contribute to this exhibit will do so. The premiums offered aggregate about $250, and ought to bring out a splendid show of fruit and flowers.

DINNER.

Dinner will be prepared in the regular dining hall of the Experiment Station, and will be served at *the low price of twenty-five cents each* to members or their friends *who secure tickets* of Sec'y Latham *prior to June 21st.* Remittances can be made by mail, and tickets will be returned through the same medium, or they can be secured personally in the office of the secretary.

Dinner will be served to those who do not secure tickets beforehand at the uniform price of thirty-five cents as far as they can be accommodated. which will only be, however, a limited number, so that *members are urged* to make their arrangements in regard to the tickets beforehand. Dinner will be served at 12:30 p. m.

Any present who are not members of the society may become such for the current year by the payment of $1.00, annual fee, to Secretary Latham, or $10.00 for a life membership.

THE AFTERNOON SESSION will begin at 2 o'clock and end at 3:30. It will be in large measure an impromptu program and, to some degree at least, in the nature of object lessons with the fruits and flowers exhibited at the meeting. A lively and helpful time may be expected. A question box will be provided for any who would like to take advantage of this method of securing information.

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HOW TO REACH THE GROUNDS.

Take the Como-Harriet or Como-Hopkins car, either in St. Paul or Minneapolis, and get off at Commonwealth Avenue, where carriages will be found waiting to carry visitors to the grounds, one-half mile distant, from 9:30 A. M. to 1:30 P. M.

SAMUEL B. GREEN, President.
St. Anthony Park.

A. W. LATHAM, Secretary,
207 Kasota Block, Minneapolis.

ENTRIES.

All entries must be in the hands of the secretary not later than Monday, June 20. *No entries can be received at the meeting.*

The size to which the exhibition made at the summer meeting has grown makes it impracticable for entries to be received on the day of the meeting, the necessary clerical work connected with these entries requiring considerably more time than is then to be had. Exhibitors are urged to *send lists of their entries* to the secretary *at as early a date as possible,* and under no circumstances later than the date noted above. *Entry blanks* for this purpose *will be furnished* by the secretary *upon application.*

PREMIUM LIST.

All exhibits must be in place and properly labeled by 11:30 a. m. to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited. (Members of the Rose Society by virtue of their membership are also members of the Horticultural Society without additional expense.)

Fruits and flowers shown become the property of the association.

N. B.—At the afternoon session exhibitors, in all classes, may be called upon to talk about the articles exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

Rose and Peony blooms can be kept in cold storage if necessary.

OUT-DOOR ROSES.

	1st prem.	2nd prem.	3rd prem.	4th prem.
Collection—three blooms of each variety, to be shown in separate vases	$10.00	$6.00	$4.00	$2.00
Collection of six named varieties—three blooms of each, in separate vases	6.00	4.00	3.00	2.00
(First and second prizes, as above, amounting to $10, contributed by Mrs. Jessica DeWolf, St. Paul).				
Three named varieties, white—three to five blooms of each, in separate vases	2.00	1.50	1.00	.50
Three named varieties, pink—three to five blooms of each, in separate vases	2.00	1.50	1.00	.50
Three named varieties, red—three to five blooms of each, in separate vases	2.00	1.50	1.00	.50
Collection of Rugosa and Rugosa hybrids, three to five blooms each, in separate vases	3.00	2.00	1.50	1.00
Most beautiful rose—in vase	(bronze medal donated by American Rose Society.)			
Largest rose—in vase	2.00			

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The following named varieties of roses to be entered separately and shown in separate vases, three to five blooms in each vase.

Prince Camille de Rohan, General Jacqueminot, Margaret Dickson, M. P. Wilder, Jules Margottin, Magna Charta, Paul Neyron, Madam Gabriel Luizet, Baroness Rothschild, Anna de Diesbach, Ulrich Brunner, John Hopper, Rosa Rugosa (pink and white), Baron de Bonstetten, Karl Druski, Madam Plantier.

Each—1st prem., 75 cents; 2nd prem., 50 cents; 3rd prem., 25 cents.

PEONIES.

		1st prem.	2nd prem.	3rd prem.	4th prem.
Vase of Festiva Maxima	6 blooms	$2.00	$1.50	$1.00	.50
" " light pink	"	"	"	"	"
" " dark "	"	"	"	"	"
" " white	"	"	"	"	"
" " red	"	"	"	"	"

	1st prem.	2nd prem.	3rd prem.	4th prem.
Collection—three blooms of each variety in separate vases...	$8.00	$6.00	$4.00	$2.00
Seedling peony, three blooms...	3.00	2.00	1.00	.50

ANNUALS AND PERENNIALS.

	1st prem.	2nd prem.	3rd prem.
Vase of Oriental poppies	$2.00	$1.25	.75
" " Iris	"	"	"
" " Delphinium	"	"	"
" " Sweet William	"	"	"
" " Lilies	"	"	"
" " Sweet peas	"	"	"
" " Canterbury bells	"	"	"
" " Foxgloves	"	"	"
" " Shasta daisies	"	"	"
" " Columbines	"	"	"
" " Nasturtiums	"	"	"
" " For-get-me-nots	"	"	"
" " Geraniums	"	"	"
" " Pansies	"	"	"
" " Flowers by children	"	"	"

STRAWBERRIES.

One quart of *each variety,* to be shown on plate, *not in box.*

Collection (not less than six varieties):
1st prem., $5.00; 2nd prem., $4.00; 3rd prem., $3.00

Collection of three named varieties 3.00; 2.00; 1.00

The following varieties of strawberries to be entered separately:

Bederwood, Dunlap, Crescent, Splendid, Clyde, Warfield, Lovett, Enhance, Glen Mary, Haverland.

Each, 1st prem., $1.00; 2nd, 75 cents; 3rd, 50 cents; 4th, 25 cents.

Best named variety not included in above list:
1st prem., $2.00; 2nd, $1.00: 3rd, 50 cents.

Seedling, originated by exhibitor:
1st prem., $3.00; 2nd, $2.00; 3rd, $1.00.

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SECRETARY'S CORNER

PRACTICAL OBJECT LESSONS.—Mr. S. H. Drum, of Waseca, has been giving short talks on horticulture in a few of the country schools in his vicinity on grafting, cross-fertilization, etc., illustrating with material from his orchard, making the grafts and performing the act of cross-fertilization. He reports a large interest on the part of both scholars and teachers in this subject. Here is a suggestion for many others in our society to act upon.

DATE OF THE SUMMER MEETING.—The twenty-third of June has been decided upon as the date of the summer meeting, being the day closest to the average of many dates that have been set by the berry growers of this region. These dates vary from June 13th. to June 29th., an extraordinary range, which is explainable of course by the vagaries of the season. This date may not accommodate all but seems to us to come nearer to doing so than any other. The announcement of the summer meeting to be found in this number should be read over carefully *as soon as received.*

PROF. GREEN AND THE NEW COLLEGE OF FORESTRY.—A new department has been lately created in connection with the Minnesota State University denominated the College of Forestry, and Prof. S. B. Green has been appointed dean of this college This act emphasizes the importance of the forestry interest in Minnesota in connection with its conservation and development. There are only a few such colleges in the United States, and probably none where the opportunities for useful service to the public in the education of young men as practical foresters are greater than in our state with its vast forest resources and immense areas adapted in a practical way to no other use so much as to the growing of forest trees.

PASSING OF W. L. PARKER.—This friend of many years, who was especially well known to all connected in any way with the horticultural department at the state fair, or with the fruit exhibits at our annual meetings for many years, passed from this life May 6th last, at the age of sixty-four years. For many years Mr. Parker was the faithful assistant superintendent in the horticultural department at the state fair, and was especially endeared to the writer from a similar service rendered him in connection with the horticultural exhibit from the state at the Chicago World's Fair, in 1893, we having spent nearly the whole season together there in most pleasant companionship. It is hard to realize the passing of this most excellent friend and loyal member of the association.

A further and more extended biography will appear in an early issue of our monthly.

THE PROSPECTIVE MINNESOTA FRUIT CROP.—Late advices indicate that raspberries and strawberries will yield a considerable crop, strawberries anywhere from one-half to three-quarters and raspberries less. As to plums there are practically none whatever in the state as far as we know. The apple orchards in the southern part of the state are bearing practically nothing. As you go north the percentage of fruit set at this time increases until the maximum is found, we judge, in the vicinity of Lake Minnetonka, where there is a prospect of a fair crop of apples, probably in the neighborhood of 50% of a full yield. Trees that did not bear too heavily last year

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and are on reasonably high ground have set fairly well. With the exception of one point in the Red River Valley, currants in the state are reported a total loss, and gooseberries the same with a single exception, the Carrie gooseberry, which certain localities at Lake Minnetonka have reported as having set a full crop. There are many lessons to be garnered from this extraordinary season, which we hope to secure very full knowledge of at the coming annual meeting.

HORTICULTURE AT THE 1910 STATE FAIR.—The florists of the state have been making special efforts to receive larger recognition at the state fair, and as a result of this in part at least the state fair management have decided to give the whole of the present so called "Agricultural Building" to the exclusive use of horticulture—that means the fruit and flower exhibits. No effort will be made this year to increase the fruit exhibit, indeed under the present circumstances with so scant a crop in sight it will be fortunate indeed if we succeed in making a sufficiently large exhibit to cover well the space heretofore occupied by fruit,. The florists of the Twin Cities have undertaken to furnish plants and flowers enough to fill the rest of the hall, which may hereafter rightfully be called "Horticultural Hall." Special exhibits of cut flowers and various forms of floral designs will be shown on different days of the week, and an effort made to make this department one of the most attractive at the fair. The bandstand in the center of the hall is to be removed and a suitable fountain put in its place. The building will be redecorated throughout and properly ornamented with evergreens, similax and other decorative plants. An especially large premium list has been prepared in the flower department for amateurs, and we are looking for a large representation from the growers of flowers especially in and about the Twin Cities. Shall we have your cooperation to make this new departure in every sense a success?

RIPE FRUITS FROM THE STATE FRUIT-BREEDING FARM.—Mr. Chas. Haralson, superintendent of the State Fruit-Breeding Farm, brought into the office this morning, May 21st., beautiful specimens of five varieties of plums and apricots ripened in the greenhouses at the State Fruit-Breeding Farm, at Zumbro Heights. These fruits are all crossed by hand in the blossom with hardy varieties, and the seed in these fruits—which will produce hybrid varieties taking the qualities of the two sorts that have been crossed—are to be planted later in boxes in the greenhouse and transplanted outdoors for testing. A little greenhouse, 20x50 ft., has been used the past winter for the purpose of doing this crossing work. In the neighborhood of 100 fruit trees are growing in this greenhouse, comprising something like thirty varieties of peaches, plums, apricots, cherries and nectarines. Besides the tree fruits, there are also being grown in the greenhouse considerable quantities of strawberries, raspberries and blackberries, which are being hand-crossed in the flower also for the same reason as in the case of the tree fruits. About 2,500 seeds from these tree fruits have been secured this year. They will be stratified in sand and planted next winter in the greenhouse for outside planting later. The aggregate of fruit grown there this year will amount to many bushels. Much of it is of delicious quality, and all of it most beautiful to behold. Those interested in this new movement for originating hardy varieties of fruits for Minnesota would be well repaid in visiting the farm and, especially through the winter months, the greenhouse where this work is being carried on. Zumbro Heights is a station on the M. & St. L. Road five miles west of Excelsior, and the farm is a quarter of a mile south of the station. Commutation tickets between Excelsior and Lake Minnetonka are good to Zumbro Heights station.

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DEVOTED TO THE STUDY OF DOMESTIC SCIENCE.

See opposite page.

THE MINNESOTA HORTICULTURIST

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A State Fair School of Domestic Science.

MRS. HOWARD MURRAY JONES, MINNEAPOLIS, DIRECTOR OF DOMESTIC SCIENCE SCHOOL IN ILLINOIS STATE FAIR.

A few years ago down in central Illinois there was a charming family consisting of father, mother and two children, one eleven and one thirteen years of age. In one week two coffins were carried out of that home, and the father and mother sat desolate. After the first paroxysm of grief had passed, out of the sorrow that had come into the home there arose in the heart of the mother a determination to do something especially for the young women of that state. Her one cry for months was, "O, that somebody had taught me how to keep my home! If somebody had given me ideas how to carry on my home better, my children would not have gone out of life in this way." Out of that thought and out of that sorrow grew what is today called the State Fair School of Domestic Science, held at Springfield, Illinois, each year at the time of the state fair.

A banker of Springfield, who became interested by the ideas brought forward by the mother whose children had been taken, asked a number of senators to dinner and invited this little mother to speak about establishing what she called a state fair school. From that came an appropriation of $8,000 in the year 1899; in 1900 the building was put up on the grounds, and the school was opened. Before the school was fairly begun, it was seen that the building was too small. Perhaps it was fortunate that this building burned in its second year. The legislators had grown wiser by experience and appropriated $20,000 for the next building, telling the women to go ahead. The governor appointed three women as a board in charge of this school. These three take general charge, look out for the equipment and plan that each county in the state shall know something of this school. It is arranged that every county shall send some young woman to the state school.

It will be of interest to you to know how the work is carried on. The board appointed by the governor sends out to every county in

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the state information concerning the school and asks each county domestic science association to appoint a delegate. This delegate appointed by the domestic science association must be endorsed by the county farmers' institute, and, strangely enough, after the first year or two of the existence of the school instead of young girls coming to the school—since the school was originally planned for girls—there came presidents of county domestic science associations and secretaries of county domestic science associations, sometimes gray-haired women who had kept house for thirty years—many times women who had kept house longer than the teachers in the school, but each one determined to get all she could out of the school to help her in her own home life.

So many of the pupils were older women that last year the board in charge of this state fair school decided to limit the age, and while they wanted the young married women of the state to come in, also the young women who were just out of college and who are at home, they had to set some limit. So the board said, "We will limit the age to thirty-five." You all know no woman ever gets to be over thirty-five (Laughter); so I suppose all will still be eligible. As these women go from one department to another with their work, they find an interest developing that gives them a fresh stimulus and encouragement to go home and take up their daily duties, greater encouragement than you can possibly imagine. This beautiful building, costing $20,000, placed in the center of the grounds, affords most comfortable accommodation to the pupils. It is equipped for one hundred and two girls, because there are one hundred and two counties in the state of Illinois. At the school there is an office used by the board of directors, and one or two other rooms planned for the comfort of the teachers. The remainder of the third floor is divided into dormitories. Down on the second floor there is a large lecture room, a room which will seat as many people as this room, in which we are now, say, four or five hundred. There is a good lecture platform and apparatus for all kinds of lectures and demonstrations. On that same floor is a large room, called a "comfort room," for the benefit of the visiting women at the fair. It is so arranged that during the fair women from all over the state of Illinois may have a place to rest. There are several small ante-rooms with baby cribs, rocking chairs and couches for tired women and children. It is a public room for all women.

This building has three full stories, and in the lower story there is a large kitchen, lavatory, pantry and a dining room for the pupils

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of the state fair school. When they come there, they sleep in the dormitories and have two sittingrooms, in each of which at least fifty can study at one time. They begin to feel at home at once. When a hundred and two gather to begin work—and last fall the family consisted of one hundred and twelve, counting teachers and the lecturers—and realize perhaps that no one of them has ever before seen a single other one of the hundred and two, I think there are a good many slight attacks of homesickness. But the second day they feel better. They know it is only for two weeks, and they catch immediately the spirit of the school.

Mrs. Howard Murray Jones.

It is planned to have the work done by squads, each under a captain, who is responsible for her own squad. For instance, one squad today takes charge of the dormitory work. No girl makes her own bed, but each squad takes full care of the dormitory for a day at a time. We find in the school all kinds of pupils, graduates of Vassar and Wellesley, graduates of high schools, but all endorsed by the county farmers' institute. You will find there women who have kept house thirty years—but all have to go through the same routine of instruction. In the morning before a single bed is made, and immediately after breakfast, the girls meet in the lecture room to listen to a lecture on sanitation. There are four teachers in the school, and the first morning a teacher brings a bed onto the platform and instructs the girls how to make it. There may not be a woman in Minnesota who needs that kind of teaching, but I suspect there are many young girls who do, and I know there are many girls from the school who can go home and teach their mothers how to do certain kinds of work more easily and in a better way than they were doing it. Then the dormitory squad is sent to the dormitory to make their beds as they have been taught. The second squad goes to the kitchen to prepare luncheon, and at 10 o'clock all the school gathers again in the lecture room for a lecture on food. Luncheon comes at 12 o'clock, and at 2

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o'clock they gather again for an hour's lecture on food. I will have more to say about these food lectures a little later.

The work of the young women is so arranged that while one squad does dormitory work today, that squad tomorrow does dining room work, setting the table, clearing the table, serving the meal, and the same squad the next day does the baking for the hundred and twelve inmates of the school. They make bread and cake and do all the baking necessary for the family. The next day that same squad does all the cooking, that is, getting all of the meals,—breakfast, luncheon and dinner; and the fifth day they wash and wipe dishes, put them up and take care of the cupboards. You see, they get one hard day and then one easy day. This is arranged so they may have time to write up their notes, putting down all the things they want to remember and carry home for future use. We have four colored women to do the heavy work, because when you take out three hours of the day for lecture work there is not much time left, and there is need of some time for the pupils to think over their work. As it is, they are busy from daylight till dark—as busy as they can be—and when they do sit down they want to compare notes and talk over things and get a little better acquainted with one another. This short recreation time is really the best part of the day.

These young women come from all parts of the state, one from the extreme northwest corner of the state and another from Egypt, the lower end of Illinois, and when these two people room side by side and begin to compare notes about their work, about their home needs and surroundings and about housekeeping, they begin to learn from each other. You know the best things in the world are not taught but caught; and as these young girls or elderly women, as the case may be, live two weeks side by side, they learn many lessons from each other that could not be taught in the school.

The lectures on sanitation are given by a trained nurse. They are given to young women with the idea that they will go back with better knowledge to their own homes with the idea of how to keep the home folks in healthier condition. These lectures deal with bed making, the care of rooms, the dangers from dust, the dangers from impure water, disinfection, ventilation, garbage disposal and other essential matters. Each young woman gets an idea of what it means to keep herself strong and well, and if she can only learn that one lesson, it is worth her while to attend the school. If the school should do nothing else but teach her to keep herself strong and well, it would be the best thing the state could accomplish. (Applause.)

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Taking up the subject of nutrition, they learn many things beside putting food on the table. There is the matter of preparation of food. I was thinking today as I stepped into this building and inhaled the aroma of apples what a wonderful thing it is to know about apples, to know how to grow them—you have heard much of that. You have been told that the apple is the "king of fruits"—and so it is! As these girls come to realize how men of other days have put in their lives developing this fruit, making it better year after year for the great public, they begin to realize that it is worth their while to put in some time and training to learn how best to use the food the Creator has given us. And so it is all the way along; they begin to learn what it means to select and properly prepare food, and how to feed themselves and others. Men living on the prairies know more about food than a great many women do, not their own food for themselves or their children but food for their cattle. If a man is going to raise cattle, he writes to his experiment station and finds out all he can about feeding his stock to the best advantage. He learns about balanced rations, and feeds his cattle a balanced ration; he watches his herd closely and weeds out those that are not profitable. If he finds one or two that are not thriving, he puts them in a pen by themselves and changes their rations, but even though a few must have exceptional food he does not lose faith in the great principle of the balanced ration.

Our pupils learn the same lesson in food principles. They learn that if people are not thriving, they must change the ration and what to substitute. They learn how to build up the body, how to feed the people who work with their brains and those who work with their muscles; how to keep up strength and nerve energy—and while they are mastering principles, they are putting them into effect all the time. They learn to put on the table a good breakfast and luncheon and a good dinner, a ration that is well balanced and which will fill the requirements of all the people in that home every day.

It means a good deal to know things, and it means a good deal more to be able to do them. I remember the story of a splendid lawyer who believed thoroughly that everybody could do anything he wanted to. I sometimes hear mothers say about this matter of teaching young women domestic science, "They will come to it when they have to; they will learn to keep house when they get their own homes, as their mothers did before them." This lawyer lost his health. You can imagine a man who gives intense application to his work and who is sometimes overworked does not always take care of himself or pay attention to proper food. This lawyer went to a farmer friend and said, "I want to work; I want to do something that will help me

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regain my lost health." The farmer said, "What can you do?" "I can do anything anybody else can do." "Then," said the farmer, "Take this stool and go to the pasture and milk that old roan cow; she is gentle." The lawyer took the pail and stool and went. He was gone two hours. Finally the farmer hunted him up and found him following the cow. The farmer said, "What's the matter?" The lawyer replied, "I don't know what is the matter, but I have tried for nearly two hours to make that old cow sit down on that stool so I could milk her." (Laughter.) If he had known a little more before he went out

Board of Managers and Instructors,
Illinois State Fair School of Domestic Science.

he would not have had that trouble. So all young women who have to prepare food do it a great deal easier if they know something about it beforehand.

This school means not only that they shall put good things on the table and that there shall be three meals a day; it means not only that they keep the building in good order, that they take proper care of the dormitories and learn good methods of sanitation, but it means that each girl is gathering something to carry home. We are glad to welcome girls into the school where they may learn to make their homes better, where they get a larger and broader

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view of their home duties, that makes them better and happier citizens. The great state of Illinois believes in its daughters, believes that whatever it can do for its daughters is going to come back a thousandfold. As they come in from one county and another, don't you suppose the people from that county are watching that state fair? One man told me last fall that the woman's building, with its one hundred and two girls, one from every county, meant more to the state fair than all the great exhibits, because it makes every county in the state interested. People come from every county in the state, and not only the girls themselves are benefited, not only the homes to which they go back are benefited, but every county gets in touch with the state fair, which in return benefits the fair itself. Men from other states are looking at that wonderful state fair school. Last fall men came clear from Louisiana to the fair for the express purpose of investigating the school. They took out their little note books and put down the cost of the building, $20,000; equipment, $2,000; running the school, something about $600 a year—all these items were noted. It shows that other states are interested and are preparing to inaugurate this movement.

Upon going back to their counties each girl must report to the county institute what she has learned. Their neighbor girls are eager for the privilege of going to the school, and a number are trying for it. By this time the domestic science associations have handed in the names of the candidates who will attend the school during next state fair.

What does all this mean? It means that the great state of Illinois, raising its cattle, its apples, its millions of bushels of grain, is not only proud of its products but is prouder still of its daughters. It believes thoroughly in them and is willing to do for them all that is possible. I have no doubt that some day every state in the Union will have this kind of school where the women of the state can come and learn the new developments in home-making, with the result that they and those in their homes will be better and stronger.

A few years ago from our eastern coast a great ship sailed away in silence, started across the ocean with no passengers, no cargo, only a few seamen to man her. She passed the Rock of Gibraltar, up the Mediterranean and touched the shores of Italy. Silently a long box was brought on board; in silence still the great ship recrossed the ocean. No passengers, no cargo except the one box, but when that ship touched our own shores the bells tolled and men bared their heads and stood in silence because the body of the man who wrote "Home, Sweet Home" had been brought home for burial.

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It was well to bring to the home-land the mortal remains of John Howard Payne. It was well to honor him who sang of the home, but how much better to actually make homes!—and to make homes we must have trained home makers. Give to the young women the best you have, and they will return it to you a thousandfold in better homes that will build up our great state of Minnesota. (Applause.)

Mr. A. J. Philips (Wis.): I can see how a lot of men can learn something right here. It is not only the women that are favored in this matter.

The President: I want to know how the expenses of these girls are defrayed.

Mrs. Jones: Each young woman pays her own expenses unless the county domestic association or the county institute pays it. She pays her own expenses to Springfield and return and pays $8.00 for the two weeks she is there. I didn't mention it because I didn't want to. It seems so little compared with the great benefit that she derives from attending the state fair and the school. That is all they pay, $8.00 for the two weeks.

The President: Mrs. Jones didn't say anything about the good time these young people have while they are at the fair, but that must be quite an enjoyable feature. Perhaps Mr. Philips would like to say a word on this subject.

Mr. A. J. Philips (Wis.): Green was afraid I was going to make a speech, but I will not. I would like to, but I am going to cut it short. I want to speak of only one thing that has occurred to me. I have attended institutes the past year; I attended fourteen in my own state and some in Minnesota; and I never heard a man get up, or a woman either, and ask for any kind of a balanced ration for the children. That is a point well to remember. I know a man—he is dead now—who paid $25.00 a month for three months in the summer for a man to train his trotting horse. He tried to make him trot, and when he got through he could not trot faster than a mile in four minutes. I wanted him to send his two boys to the Agricultural School, and he said he could not afford it.

LETTUCE EXPERIMENTS were conducted at the Wisconsin experiment station to determine the advantages of the relative value of sub-irrigation as compared with surface watering. Two crops of lettuce were grown. The first crop was harvested from January 15 to 31 and the second crop from April 2 to 7. In summing up the results from both crops, it was found that the surface-watered bench yielded nearly 60 pounds more lettuce than did the sub-irrigated bench, or a difference of approximately 600 pounds for a house 20x100 feet. Judging from these results those in charge are of the opinion that with proper care as large crops can be produced with surface watering as with sub-irrigation, and that the added precaution necessary in surface watering is more than offset by the difficulties and cost connected with the sub-irrigation system.

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TRIAL STATIONS
Midsummer Reports, 1910.

Central Trial Station, St. Anthony Park.

PROF. S. B. GREEN, SUPT.

This has been the most discouraging spring that we have ever known. The warm weather of March and April brought our plants unusually early into flower, and the severe cold weather which came later destroyed the prospect of fruit with plums, currants and gooseberries very generally; and with the exception of a few favored localities the apple crop will be a failure.

The dry weather of June has largely prevented our having a strawberry crop, which had set well and promised good returns. Blackberries and raspberries have set well and promise a good crop if the dry weather does not interfere. In the fruit plantation at the Experiment Station, we shall have a few currants and gooseberries on the species commonly grown; but on the wild black currant from northern Minnesota, which we have tried to improve for a number of years and from which we had selected some plants as being especially valuable, we shall have a full crop, as the bushes are now heavily laden.

Mr. Chas. Haraldson and his son Elmer crossing fruits in the greenhouses at the State Fruit-Breeding Farm.

At the Fruit-Breeding Farm and at University Farm, we had perhaps 10,000 seedling plum trees in flower at the time of the severe

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freeze, and many of these were the result of handmade crosses, which we regarded as being of especial promise. We shall get a few plums of those grown in the field that were crossed with Burbank, and which were protected with cotton cloth at the time of the heavy freeze, for although these flowers froze solid they thawed out and set some fruit. These are very promising.

The work of crossing fruits in the greenhouse has gone on at the Fruit-Breeding Farm as usual, and this is one of the great advantages of handling this work under glass, since under such conditions we can control the temperature and moisture and can do accurate work in hand-pollination, which has been very successful with us this

Top of Climax plum tree in fruit in the greenhouse. Fruit large and finely colored.

year. It may not be generally known that our plan is to grow the plants for crossing purposes in small tubs in the greenhouse, and these are brought into flower and crossed by hand; and in this way we get far better results than when we attempt to do such work in the open. Some single plum trees in the greenhouse have borne as high as one hundred and forty good fruits, which they have brought to maturity. For this crossing work we have grown a considerable number of the Japanese kinds and crossed them with our native plums and also with the sand cherry. We have also used the peach and apricot, and even the cherry, in crosses with our wild plum and sand

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cherry. From these crosses we do not expect much in an economic way, but they are of interest scientifically, and may possibly lead to good practical results.

A typical bearing plum tree in the greenhouse.

In spite of the frost which froze back several thousand of our Beta seedlings after they were nicely started, we shall get a fairly good crop on the older Beta seedlings. This grape we are paying especial attention to, as we think it the most promising "lode" for us to work at present. As soon as we can arrange for it, we aim to cross the Beta with some of the better kinds of Labrusca, and even with some of the Vinifera varieties.

Arrangement has been made to double the size of the greenhouse used for this crossing work, increasing it to 100 feet long by eighteen feet wide.

At the Fruit-Breeding Farm, we have picked about forty cases of seedling strawberries, which as a whole were very much smaller in size than they would have been had we had plenty of moisture. In fact, if we had had a favorable season the chances are we would have had four hundred cases from these seedlings and could have exhibited three or four hundred good seedling sorts at the summer meeting.

CUT WORMS EASILY DESTROYED.—**Bran is very attractive to cutworms, and they may be killed in the field by the use of poisoned bran. They take this food in preference to the green plants. To poison the bran, mix one pound white arsenate and paris green with 50 pounds bran and five pounds powdered sugar. Add water enough to moisten thoroughly. A spoonful of this to a hill of plants will attract every cutworm in the field in two or three nights.**

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Collegeville Trial Station.

REV. JOHN B. KATZNER, SUPT.

Since my last annual report a good deal of work has been done at this station. Late in fall the evergreen seedlings and strawberries were covered for winter protection. Preparations were made for setting out pear, apple and plum trees. During the winter and spring apple and plum grafts of different varieties, among which are some promising seedlings, were made and the trees protected with wooden veneers. The winter was not excessively cold, and spring came along unusually early; in fact it was the earliest spring of all the forty-three years I have been living in Minnesota.

All through March we had the finest spring weather, and on the 18th of this month I commenced setting out apple, pear and plum trees. This was the earliest time I ever set out any trees. The varieties planted are the Northwestern Greening, Patten's, Anisim, Eastman, Ohio Red Cheek, Fieser's Erstling, Eveline, Green Duchess, Iowa Blush and a few others from Wisconsin. Of plums were set out in a new orchard twelve hybrids originated by Chas. Haralson, of the State Fruit-Breeding Farm, which he had the kindness to send to the station last fall; then the Gardner, Wolf, Terry, Surprise and two seedlings. Of pears were set out 180 seedlings in five different locations with the idea to find out what environment is the best for pear trees to grow in. For the same purpose a new place well protected from the northwest winds by tall forest trees is now being prepared for next year's planting. I have reason to believe that our cold and particularly dry northwest winds are many a time the principal cause of failure in horticulture, and the better our trees are protected—especially so if they are a little sensitive in regard to cold from the northern blasts—the better they will get through winter.

All trees set out in the orchard this spring have been mulched with straw manure, as I cannot well cultivate them, and all have started growth since the frosts. After the fruit trees some fifty Ohio buckeye chestnuts from our nursery were set out on the students' grounds along the walks in the park. A year ago last fall a few butternuts from Aitkin, Minn., were planted. They grew to very nice seedlings last year and this spring were transplanted on a favorable place in the grounds. All are alive and growing. No pine or spruce were planted this spring as the seedlings are too small yet. In the nursery the usual work has been done. All the grafts prepared were set out, and about 100 pear seedlings were transplanted.

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Our florist has been very busy of late in planting different floral designs of various flower and foliage plants raised from cuttings in the greenhouse last winter. Things about the buildings look now very beautiful. To the floral department have been added and planted last fall Gingko biloba, Berberis thunbergi, Calycanthus floridus, Forsythia fortunei, Syringa japonica, Persica alba, Viburnum dentatum and plicatum, Yucca filamentosa, Deuzia lemoinei, Euonymus radicans and Gleditschia triacanthos. I had my doubts about the advisability of planting them in fall, but with the exception of the last two mentioned, which were frozen, all endured the winter pretty well.

The prospect for a good fruit crop this spring was splendid. Spring came along very early. The fruit trees started to grow towards the end of March, and by April the 16th the Transcendent crabs were just about to open the flowers. Then came the heavy frosts, which nipped nearly all the buds, leaves and blossoms on every tree and plant that had started to grow. On April 17 the temperature went down to 19° above and on May the 3rd to 21°. Many fruit buds on apple trees had escaped the first cold snap where well protected, but the second freeze on May the 3rd, the buds being then further advanced, finished them nearly all. This was particularly the case with trees on exposed locations. The Scotch pine seedlings had been uncovered before the frosts, and the repeated freezing browned and destroyed at least 60 per cent of them. The most advanced blossoms on strawberries where uncovered had turned black in the center and only a partial crop can be expected. Good by, all ye prospects of a bountiful crop this year!

This report shall not become a calamity howl. There is no use crying over spilled milk nor over frozen apple-blossoms, but from this loss we should rather learn a lesson for the future if possible. The practical points which present themselves at first sight are that whatever has been covered should remain under cover as late as possible, and if the mulch has to be removed on account of growth, let that be done only in part. On strawberries, for instance, a light covering might be left on to advantage as a protection against frosts and later on serve to keep the fruit clean from dirt. Where a man has but a few currant bushes they might probably be covered with old barrels, horse blankets and the like in time of heavy frost, and a good deal of fruit might be saved in that way.

But what shall we do with our orchards, as we cannot cover them? True, we cannot do much against heavy frosts where the orchards are planted on level, exposed sites, but the damaging effects of heavy frosts are much diminished by planting the orchards only on

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high locations which are well protected by good windbreaks from the northwest winds. There is perhaps no orchard in Minnesota which, like ours, shows more conclusively what location and protection will do in time of frost. Our orchard consists of three small orchards, each with about 150 trees. The first is located immediately south of the large college buildings on the same level and has the protection of the buildings. The second lies about ten feet lower, slopes to the north and has some protection from a little elevation planted with small evergreen. The third is some eight feet lower than the second and is exposed to the northwest winds. The frosts have done damage in the three orchards, but there is a great difference to be noticed. On careful examination it was found that in the first orchard trees have set fruit from a few apples to about 85% of what might be called a good crop; in the second from no fruit to about 40%, and in the third, with the exception of a few Peters, there is not an apple to be seen. This being partly an off year with us not many trees were blooming, yet enough were found to make a comparison of the same varieties in the three orchards.

The following table shows the approximate per cent of fruit, mostly on the same varieties, in the three orchards:

Orchard 1.		Orchard 2.		Orchard 3.	
Wealthy	80	Wealthy	40	Wealthy	..
Duchess	80	Duchess	40	Duchess	..
Charlamoff	85	Charlamoff	30	Charlamoff	..
Peerless	75	Malinda	15	Peter	..
Patten's Greening	80	Patt. Greening	..	Patt. Greening	..
Hibernal	40	Hibernal	10	Hibernal	..
Anisim	..	University	..	Ostrekoff	..
Tetofsky	50	Grant's crab	10	Tetofsky	..
Longfield	..	Longfield	..	Longfield	..
Patten's No. 109.	75	Briar Sweet	15	Phoenix Red	..
Whitney	85	Whitney	05	Whitney	..
Early Strawberry	65	Early Strawberry	20	Beecher's Sweet	..
Virginia	25	Virginia	05	Virginia	..
Transcendent	..	Transcendent	..	Pointed Pipka	..

Transcendent, Lyman's Prolific and all of the plums have suffered the most from the frosts; Anisim, Longfield and Transcendent, though blooming well, set no fruit in any location. These observations I think should prove conclusively the advisability of planting new orchards on the highest location available and surrounding it on the northwest side with a good, high-growing windbreak, for this alone may save at least in part the apple crop in time of frost where other protections are impracticable.

P. S.—The above per cent has been reduced by dropping of some of the fruit lately to about 60%.

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Glencoe Trial Station.

A. H. REED, SUPT.

June 13, 1910. One of the most peculiar seasons so far in my memory. March was warm and pleasant, and on April 15 tree foliage was three weeks more advanced than in the season of 1909.

I copy the following from my record book of events in gardening:

"March 13. Sunday, birthday, seventy-five years old. Weather fine all the month after very cold January and February. Sowed onions, radish and lettuce in open garden."

"March 20. No frost in ground; sowed onions; dug four rows parsnips. Received apple scions from friends in Maine of the following varieties: Northern Spy, Roxbury Russet and Golden Russet."

Wish to say here that all three varieties have been grafted onto Hibernal and Peerless trees and nearly every scion growing. Grafted tree about six inches through at butt.

"March 28. Planted quarter acre potatoes." "30. Coldest day of season; some varieties commence to leaf out; slight rain yesterday; Quack grass two to four inches growth."

"April 10. Plum trees in bloom." "April 15-16. Severe freeze, water froze quarter inch thick, ground froze one inch."

"April 17. Apple blossoms partly out, plum trees full bloom."

"April 22. Water froze three-eighths inch thick last night; Compass cherry in bloom; April trees partly blossomed. Think all killed."

"April 30. Planted one acre potatoes." "May 7. Planted one acre field corn. Apple blossoms on some trees not killed by late frosts."

Cold nights were the order through the latter part of April and May and, I might say, up to June 11, and consequently the season has turned late instead of early, as March indicated.

There will be no fruit of any kind except strawberries, which bids fair to be an average crop.

The freeze of April 15 and 16 blackened the foliage of all shade trees, especially box elder, cottonwood, horse chestnuts, which caused half grown leaves to drop as in the fall.

I have just discovered a very few of my Compass cherry plums fruiting very sparingly.

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Duluth Trial Station.

A. B. HOSTETTER, SUPT.

June 15, 1910.

Made a little tour in the neighborhood of Duluth and can report following conditions in regard to horticulture in this section at the present time:

The unusual warm weather in March and April started the fruit buds and foliage prematurely, but so far as I can learn no material damage has been done to the fruit in this vicinity. Currants, gooseberries, strawberries at this date promise a fair crop. None of them have been injured materially by the frost. In some localities the fruit of these three varieties will be smaller than it should be, on account of the dry weather which has prevailed in this section since about the middle of May. Some apples have formed upon the Duchess, Okabena and Northwestern Greening, but it is too early for me to tell at present in regard to prospects for the apple crop. Spring plantings of small fruits, such as currants, raspberries and strawberries, are at present in fair condititon. Where the cultivation has been thorough, plants show no deterioration from lack of moisture in the soil.

We have planted one thousand Senator Dunlap strawberries and a hundred and fifty King raspberries upon our station plat, and up to this date they are all doing well. Will plant fruit trees of various kinds either this fall or next spring. A few of the Compass and Homer cherries have this season set fruit for the first time. We shall watch with interest the outcome from these young trees.

Jeffers Trial Station.

DEWAIN COOK, SUPT.

June 22, 1910. We are right in the midst of strawberry picking at the present time. There was a fair crop of berries set on the vines in spite of the many frosts, but owing mostly to drouth the crop will be short. We are growing mostly of the Dunlaps—also have a good many of Prof. Hansen's South Dakota No. 1, which set fruit for a large crop and are giving good satisfaction. The berries bruise easily, but are selling in our local market at the highest prices. The vines need no winter protection.

Our red raspberry canes were all killed to the ground by our winter and spring freezes, the only exception being the Sunbeam. This variety killed back slightly by the winter's cold, and it also suf-

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fered severely by the April freezes—yet it had vitality enough to largely recover, is blooming freely and now promises from one-half to two-thirds of a full crop.

Grape vines came through the winter in fine condition and were in full foliage when the April freezes came. None of vines were entirely killed, as they are all now sprouting freely from the roots. The canes are still green but bare of foliage.

All vegetation the spring of 1910 was fully one month earlier than usual—six weeks earlier than it is some seasons—and when the April freezes began, the willows, box elders, soft maples, larches, cottonwoods and many other varieties of forest and other trees were in full foliage. The foliage on all of the forest trees was entirely killed. The

Silver spruce at Jeffers Trial Station.

soft maples very quickly began to grow a second foliage, which in turn was entirely killed by frosts a second time; but have now about fully recovered. The box elder trees have also nearly recovered from the effects of the spring freezes, but there is still less foliage on them than there was the first week in April. American larches are still alive, with very scant foliage, but have apparently lost nearly one year's growth. My one European larch is in better condition. Elm trees were not injured any as they leaved out later; the buds had not opened at the time of the freezes. Cottonwood trees suffered the most of all. The groves and shelter belts of this section are largely of cottonwood trees. These were frozen so badly that the foliage on them at the present writing is very scant—they appear to me to be in a dying condition, and I doubt if many of the older cottonwood trees ever fully recover.

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The common gray willow has fully recovered. I consider it the only willow to grow for shelter or for timber. The Russian golden willow has just about succumbed to the spring freezes. We have been growing this willow for twenty-four years. I consider it not hardy and worthless. The laurel-leafed willow is also considered only half-hardy, but it recovered from the April freezes better than did the golden willow.

Part of trial orchard at Jeffers Trial Station.

As to the evergreens: We are growing about twenty varieties, and every one of them was in prime condition all of the time; neither the winter's cold nor the spring freezes had any injurious effect on any of them whatever.

As to the effects of the spring freeze on the apple trees: There was considerable foliage on the trees at that time, but it was only partially killed, and none of the bearing apple trees suffered material injury, but some of the very young trees were killed. Of course the apple crop was ruined, but we shall get a very few apples. The Malindas promise thirty or forty per cent of a full crop. There will be specimens on the Wealthys—also of several other varieties.

The crop of currants and gooseberries was entirely destroyed. A few blackberries and dewberries seem to be all right; they show considerable bloom now.

As to plums: Of course the crop was ruined. In looking over our trees a few days ago I was surprised to find a few specimens on the Wyant, Paul Wolf, De Soto and several other varieties. The

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shot hole fungus of the plum is not apparent. We have so far seen no tent caterpillars anywhere—or any blight on the apple trees. The many varieties of hybrid plums from Prof. Hansen and some other hybrid plums all wintered perfectly, but there is not a specimen of fruit on any of them. We spent over two weeks last March grafting hybrid plums on our native plum stocks. They started to grow nicely, and I was feeling highly elated at my success, but the April freezes killed them nearly every one.

I am indebted to W. L. Prosser for scions of the Prosser apple, and to Prof. Hansen for a collection of scions of his new hybrid plums. I believe I have succeeded in getting some scions of all the varieties to grow.

Montevideo Trial Station.

L. R. MOYER, SUPT.

The winter of 1909-10 began with a heavy fall of snow, and the ground in protected locations froze scarcely at all. Gladiolus bulbs left out in the garden undug came through the winter in good condition, and the plants bid fair to bloom this summer. This ideal winter broke up early in March and was followed by six weeks of weather so very warm that even the oldest inhabitant could remember nothing like it. The seeds on the elm trees were about ready to fall, the apple trees were in full bloom, the plum blossoms were about ready to drop their petals, when the weather suddenly changed from summer heat to about fifteen degrees of frost, and there was snow, followed by unseasonably cold weather for another six weeks. The forests, the orchards and the flowering shrubs looked sorry and dismal. Box elders and the native red-berried elder suffered nearly as much as did the foreign shrubs, such as lilacs, spireas and bush honeysuckles. The only lilac to bloom at all was the Lady Josika. At this writing (June 15) this lilac is showing several blooms.

There will be no apples in the trial station orchard, except a few Blushed Calville and a few specimens of No. 322. None of our trees are more persistent bearers than the Blushed Calville, but it is rather weak in tree, and last fall one of them was consigned to the brush-heap. Perhaps its death was due to overcrowding, as the trees had been set close together, as was so often recommended a dozen years ago. Some apple trees had been protected against rabbits by wrapping with burlap for some two or three years, but last year it was decided to use elm veneer. Unfortunately in one instance the burlap was not removed before the veneer was put on. A mouse found the veneer and thought it looked like a good house, moved in, used the burlap for a bed, and feasted on the bark of the tree.

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There will be no plums of any kind. Perhaps it is a good thing, too. It may be nature's way to get rid of the plum rot. The plum rot spores are said to hibernate on the "mummies" or diseased plums that so often hang on the trees all winter. There will be no "mummies" to hang on this year, and it will be interesting to note what effect it may have on the plum crop next year. Prof. Hansen's purple plums, hybrids of Prunus cerasifera atropurpurea, forms A, B, C and D, all killed back to the ground, but are starting vigorously, especially cross D.

The Niobe weeping willow suffered much from the spring frosts, as indeed did all the native willows. It seems to be an excellent and very ornamental tree for moist ground. The little Ural willow is doing well in the park plantings, especially in moist places.

During such a spring as this, one could hardly expect many spring flowers, for even cottonwood trees froze back, in some instances as much as three feet. Tulips, violets and even mertensias suffered greatly; but among the general wreck it was a comfort to see the common blue phlox from the woods (Phlox divaricata) blooming in profusion. One who has a shady garden can hardly afford not to have this flower.

Plum Center Fruit Farm.

JAMES ARROWOOD, NEVIS, PROP.

June 10. I presume that the horticultural people of the state would like to know what damage the frosts of April and May did to my orchard. All early varieties of apples were badly damaged. I have some seedling apples from Duchess seed that are very full of fruit, which seem to have withstood the freezing and frost well. My plum trees are just loaded down, in fact many of them will have to be relieved of part of their burden. I made the claim last December at the horticultural meeting in Minneapolis, in the presence of Mr. Shutz, of Leroy, that I had the best plum that is in the United States at present. Mr. Shutz said, "Stick to it." Now I am more convinced than ever that I was right, as this is the sixth year in succession for my Hubbard County plum. It has had to be relieved every year of part of its fruit in order to hold up under its burden.

Strawberries and raspberries point to a fair crop. Currants and gooseberries are almost a failure.

There are no grapes in this section that are doing any good, except the new seedling that is called Arrowood's Pride. It is a cross between the Concord and a Fox grape. The old vine is twelve years

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old. It is doing well wherever it has been tried, being a fine grower and a great fruiter.

This section has been badly handicapped by Southern nurserymen. Most all trees die the first or second year from planting on account of their tenderness. I am putting out a great many seedling plums which are doing well. I believe this is the only way to get the people interested in fruit growing. We will have to use our home grown stock in order to make a success of fruit growing. This can be made a good fruit section in time. My trees all came through last winter in the best possible condition with very little loss.

Owatonna Trial Station.

THOS. E. CASHMAN, SUPT.

June 14, 1910. The report of the Owatonna station for the season of 1910 is anything but encouraging. The unusually warm weather in March started apple trees, as well as all other deciduous trees, shrubs, plants and evergreens, in a most vigorous manner, and the cold, hard freezing weather of April found them in a most delicate condition. All plum blossoms as well as the early apple blossoms, the currants and gooseberries were caught by the first hard freeze in April. However, late apple blossoms were not out far enough to be injured, and we were in hopes that we should at least get half a crop; but about a week later the thermometer fell to 18° and froze the ground fully an inch and a half deep. This freeze cleaned up everything that was out.

There are, however, a few scattering trees through the country which were not in blossom at that time. Some of them were held back by growing in the shade, and some that were injured the past two or three years were slow in blossoming. In a few of these remote cases there are a few apples. It has been reported to me that quite a number of Malinda trees in one block in this locality will bear quite a crop of fruit, and in another case I hear of a few Duchess and Wealthy.

Where the covering was allowed to remain on the strawberry plants until about May 1, they escaped the late frosts, and in those cases the crop will be very good, providing we receive sufficient rain to mature the berries. We now need rain badly. Raspberries will produce at least half a crop in this vicinity and a full crop in some places where they have been properly protected by covering during the winter; that is, these plants are set quite well and will produce well if we receive the necessary rains. The growth of all deciduous trees and

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shrubs will be considerably shortened this season on account of the killing of the young shoots and foliage; however, they are nearly all recovering from the shock.

At the Owatonna station we have gone through the regular routine of spraying in order to kill off insect pests and fungous diseases which might accumulate, and we have also kept the ground in a thorough state of cultivation, which, along with the spraying, will keep the trees vigorous and thrifty and prepare them for a good crop of fruit another year should conditions be favorable. The past winter was a very favorable one for fruit trees, plants and shrubs of all descriptions. The ground was thoroughly saturated with water when winter set in last fall, and large quantities of snow began to fall in November, which remained until March—so the trees came through in a very vigorous condition. This accounted somewhat for their leafing out and blossoming as early as they did and being caught by the early frost.

Paynesville Trial Station.

FRANK BROWN, SUPT.

It is not my purpose to make a full report at this time of the results of the freeze or of our late spring—and I almost said summer—for we had a frost June 1 that formed ice as thick as a window pane. Only a few points will be noted, leaving others for further study and a full report later.

Many of our white oak trees lost not only the new growth but that of last season as well. Of course apples, plums, etc., are a complete failure, but the trees of bearing size came through in perfect condition, while some young stock, especially yearling Wealthys, were killed to the ground after being in nearly full leaf.

This disastrous spring has again demonstrated the hardiness of the Sunbeam raspberry, for while some of the others were killed to the ground, and all were stripped of their foliage, the Sunbeam came through unscathed and bids fair to produce a heavy crop of fruit. Strawberries will be a half crop if we get rain soon.

Perennial flowers show the effect of the freeze in the amount of bloom, and also in the size of the flowers. Peonies will carry only about one-fourth the amount of flowers that they have heretofore.

Shrubbery suffered to some extent, and it is noticable that the hardiness of a plant was no protection against this out-of-the-season frost visitation.

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We find much to encourage us in the fact that all kinds of vegetation suffered fully as much as what might be called "horticultural lines," as even our hardy native grasses were frozen to the ground.

So let us press forward to greater, nobler things, trusting in Him "Who doeth all things well" and full of faith in grand old Minnesota,

West Concord Trial Station.

FRED COWLES, SUPT.

June 14. This has been a very peculiar spring, as it started out about four to six weeks earlier than usual. Vegetation started, trees and shrubs sent forth their leaves, only to find that we were not in a warm, sunny clime, but that winter or cold freezing weather was here again.

The cottonwood, willow, birch and many other trees and shrubs lost most of their foliage and had to commence over again, and most of these trees will not have as heavy foliage as they usually do.

The spireae Van Houttii lost all of its leaves and blossom buds, but at this writing it is leafed out again and is blooming quite nicely. Snowballs blossomed full and were not injured by the freeze. Honeysuckles were injured on the north side of the bushes, while the south side blossomed quite nicely. Lilac buds were all killed.

Bleeding hearts were in bloom and were killed to the ground, but have come up again and are blossoming some at this time.

We are surprised to see many peonies in blossom, as after several freezes we noticed the foliage so wilted that we thought the blossom buds surely killed, but the peony is so hardy it very seldom disappoints.

The season has been very hard on small stock transplanted in the nursery rows, but we are keeping our cultivators going to form a dust blanket to hold all of the moisture that we can. We planted our strawberries just before that severe freeze. We had the pleasure of planting them over again, but we have a very good stand, though they are much in need of rain. Our fruiting beds looked at one time as if we would get no fruit, but a good rain would insure us about one-half crop. We have not picked any at this writing.

Currants and gooseberries are a total failure, while raspberries and blackberries are looking very good, and we have a promise of a fair crop. The Older raspberry lost most of its foliage, but it has come on again and is blossoming quite full.

Apples of almost all varieties blossomed full—even the Peerless was white with bloom—but Jack Frost only left a few. In some or-

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chards around here some trees are quite well filled with fruit, but as a general thing the apple crop will be light.

We are trying some of A. D. Brown's seedlings, Gem City and several other varieties. These came through the winter in good condition. We also have three of C. G. Patten's seedlings, which are looking fine. These have not fruited yet.

Our evergreens came through the winter and spring in good condition, except white spruce and balsam fir. These two varieties made a very early growth, and the hard freeze killed the new growth. Some of the trees, while not dead, are not putting out any new growth, as all or most all of the buds were killed. We are watching these, wondering how they are coming out. Arbor vitae was not injured any this winter and showed no signs of blight.

Influence of Floral Adornment on Home Life.

PROF. A. E. HAYNES, STATE UNIVERSITY, MINNEAPOLIS.

"God might have made the earth bring forth
Enough for great and small,
The oak tree and the cedar tree,
Without a flower at all."

Why, then, does He create them? I think He does it because He admires their beauty. If we are made in His image, should not we, also, be their admirers?

I take it, too, that these manifestations of His creative power are also an evidence of His love for His children.

I cannot remember when I was not fond of flowers; I think I was born with a love for them. My precious mother was possessed with a rare interest and passion for them, and under her care plants grew with unusual thrift and smiled back at her in beautiful blossoms, as if they had been touched by a magic wand. Some of the sweetest memories of my life are of my mother and our humble log-house home, with its environment of flowers, which her love and interest had thus beautified until it was more attractive to me than a palace of marble.

We cannot all have palaces of stone in which to live; but God stands ready to coöperate with us by His divine power, as expressed in nature's laws, to make our homes, however humble, beautiful with these evidences of His fatherly interest. My sainted mother appreciated all this; for, in her last letter to me, written in winter only a few days before her sweet spirit went to the soul's eternal summerland, she said: "I wish you could see my house plants. I have thirty-

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six pots of them. I cherish them as dear friends and feel to praise the Giver for all His beautiful works that I enjoy." Do you wonder that I think my mother would be lonely in Heaven without flowers?

How gladly I recall the busy days of my boyhood on the farm, when, letting the team take its "nooning," I spaded flower-beds in the front yard for her and thus deepened my interest in what she loved, until, in my boyish enthusiasm, I wrote these words:

"Flowers, emblems of the soul,
Looking with beautiful eyes,
Turn the thoughts of erring man
To his home beyond the skies.

"They die when the cold winds blow
And the year is in its even;
In the spring they bloom again:
So shall the soul in Heaven."

Do you wonder that in my younger manhood I have even stooped and kissed the first spring hepatica found blooming in the woods?

The reason for cultivating flowers about the house is their good influence. This influence is shown in three directions at least: educationally, morally and spiritually. Not long ago I became interested in a poppy and began to study it, and finally counted the seeds in one of its pods. I found there were 6,400. Each seed was perfect in itself and capable of producing a plant like its parent, under a law as unerring as the great law of gravitation. I had become very much interested in the splendid mechanism of the pod itself, but I became more so as I learned that the one seed from which this plant had sprung had produced in this and other pods not less than 10,000 seeds. And so, by using this multiplication table of God, it was easy to determine that in the second year the number of seeds would be 100,000,000—a number so vast as to equal the total number of stars in the heavens visible with the best telescopes.

If the mind grows dizzy in contemplating the countless stars of the firmament, how much more overwhelmed will it be in trying to grasp the number of seeds produced from this single seed in the tenth year? In other words, more mathematically expressed, to find the tenth term of a geometrical progression whose first term is "1" and whose ratio is "10,000"? If the Psalmist could say, "The heavens declare the glory of God," could I not say it with equal truth of this seed? Is not each seed more wonderful than a world? Can a world reproduce itself? Who can explain the profound creative mystery locked within a single seed? If a man could create a seed what an

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evidence of his skill and power it would be! How the scientific world would crown him with its highest honors! But God makes countless millions of them to scatter broadcast on the winds.

I have said that this influence is shown morally. Does this need any argument? Do we not all feel an upward lift in the presence of these beautiful creations of God?

And again, this influence results in a spiritual elevation; for it leads us to contemplate not only the work of God but God Himself.

I am here constrained to write: Blessed indeed is the home which has the triple benediction of flowers!

Organization and Working of a Fruit Growers' Association.

C. A. SARGEANT, EXCELSIOR.

The elevation of the standard of any business will work to the advantage of those engaged in that business. The selling end of any business is the important part of it. The growing of good fruit is, of course, fundamental to the selling of good fruit. Formerly growing and selling were all one business, but those days are past. Ours is an age of specialization. Marketing has become almost a science in itself. Selling fruit is a very different business from the growing of it, and while there are many farmers who are successful growers of good fruit, the number who can market it successfully and profitably is comparatively small, due no doubt to lack of business ability or a lack of knowledge of market demands or conditions. The market problem is a special business by itself, and few growers are in a position to know both ends of the business. What then is the solution? Co-operation.

Perhaps the greatest aid to successful fruit production today is co-operation. The fruit growers' union is an institution born of necessity. An association of growers, through its agent or manager, can keep in touch with prices and market demands. It always pays the fruit grower to study the demands of the market and to give the people the kind of fruit they want. The association can secure uniform grades and packages; sprayers and material can be obtained at wholesale prices; cars, rates and concessions from railroads and express companies. Growers in other sections are capturing the markets, both local and foreign, by their system of intelligent co-operation.

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The Minnesota fruit growers are as yet unorganized along this line; generally speaking it seems to be a case of individualism, or every man for himself, and there is danger in our enthusiasm for fruit growing that the selling end is being neglected. The Lake Minnetonka region has two growers' associations in successful operation at the present time, and a synopsis of the workings of one of these associations is the purport of this paper.

The Excelsior Fruit Growers' Association was organized in May, 1900, with a membership of twenty-five. It was found that it is no easy thing to get farmers to coöperate, that there must be a certain amount of delay in bringing about new methods; people having done certain things in certain ways for a generation are hard to awaken. All sorts of hindrances were thrown in the way of the new organization, some of the local merchants being most active in their endeavors to discourage it.

The first season was one of experience chiefly, though the association succeeded in marketing its fruit at fairly remunerative prices at an expense of about seven per cent. Success being assured the membership has steadily increased to one hundred and fifty. The membership fee is two dollars with no assessments. The officers of the association consist of president, secretary, treasurer and board of three directors; the president and secretary are ex-officio members of the board of directors, all serving without pay. The board of directors employ a general manager whose duties are to take charge of the receiving, selling and shipping of fruits, collect and receive the pay therefor, and pay the same into the hands of the treasurer. The treasurer and general manager each give bonds approved by the board of directors. No person can become a member of the association unless he is a producer of fruit except the general manager.

All fruit delivered to the association has the grower's name stamped on the end of each case and is subject to inspection by the manager. The fruit is delivered at the railway platform and receipted for by the manager, who fixes the price and ships the day's receipts to the retailers irrespective of who grew the same. If a car of fruit be over-ripe or not up to the standard, it is so recorded and sent to the commission house or local dealer to be sold for what it may bring, and the grower suffers the loss. The fruit is taken out at night by train, without refrigeration, to the retailer, who pays the freight, and it reaches the consumer within twenty-four hours after picking—so there is no question as to its freshness. Every grower who contributed to the day's shipment is entitled to his share of the proceeds of such day's sale in proportion to the number of crates by said grower, but one-tenth of

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each day's proceeds is retained by the association until the complete returns for the season are received. The expense of carrying on the business of the association is paid from the ten per cent so retained, and the balance of the amount, if any after paying such expenses, at the time of the settlement of the sales for the year, is divided among the members of the association in proportion to the amount of fruit each member furnished. The expense varies with the fruit production from three and a half to ten per cent.

Each member, by the usual order, may once each week during the active berry season draw from the treasurer one-half of the money collected and due him from the fruit sold on his account. The association may be termed a partnership affair; the members are partners. Each member assumes part of the expense of the business and shares in the increased returns—from five to twenty per cent of his product.

It is needless to add that the success of the association depends on having a wide awake business manager. In addition to the small fruits the association has, for the past two years, handled the overplus vegetables grown in the vicinity at prevailing market prices. Prices received by the association may sometimes be lower than those received by individual marketing, but in order that the ultimate benefits of united management may be realized it is necessary that the members should stand by the association. The matter of association and organization is simply a matter of self-preservation to the producer.

The annual meeting of the local association is held on the first Monday of April, at which time the manager's report for the year is made, and the election of officers and directors is held. Every member of the association is entitled to vote and express his opinion, and is also eligible to office or a place on the board of directors. Following the routine business, fruit topics are discussed by the members and invited guests, interspersed with music, etc.

Co-operative selling under proper management enables the grower to realize ninety to ninety-five per cent of his product where the individual is liable to lose twenty-five to fifty per cent—in fact these growers' associations and the successful manner in which they have been handled have made the fruit industry what it is today and upon them will depend the future of the business.

The President: Mr. Wright (Mr. Wright read this paper in the absence of its writer) is familiar with this subject and is competent to answer any questions you may wish to ask him.

Mr. Sahler: In shipping freight seventy-five to one hundred miles, do you not find there is a considerable settling in the boxes?

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Mr. R. A. Wright: We do not ship by freight; everything goes by express. There would be some settling, but in our case everything goes out at night and is on the market the next morning.

Mr. Sahler: Do you know the average you received per crate for berries?

Mr. Wright: Well, the past two seasons our raspberries have averaged us from $2.20 to $2.24 per crate.

Mr. Sahler: How large a crate?

Mr. Wright: Twelve quarts.

Mr. Sahler: How much for strawberries?

Mr. Wright: This year the twenty-four quart crate ran about $2.64, and last year about $2.48 per crate.

Mr. Sahler: Do you use pint boxes altogether?

Mr. Wright: For raspberries and blackberries we use pint boxes, and quart boxes for currants, strawberries and gooseberries.

Mr. Husser: Do you have a salesman here in the city who looks after your fruit?

Mr. Wright: No, sir; our manager handles everything from Excelsior. We send him out on the road to make sales before the season begins. If the fruit does not go west on account of rain or being in a soft condition, we send it to the city.

The President: What were your sales this year, Mr. Wright?

Mr. Wright: A little over $18,000.

The President: What was it at the other place?

Mr. Wright: $26,000—a little more.

Mr. Sahler: Do you handle apples?

Mr. Wright: We did this year. We made the venture with apples this year, and I think it was fairly successful.

FERTILIZING THE MUSKMELON.—The New Jersey experiment station secured an increase in yield of 115% by the use of 150 to 200 pounds of nitrate of soda per acre. Half the fertilizer was applied at planting time about the hills and worked into the soil, and the remainder about three weeks later. Dried blood and sulphate of ammonia used in the same manner were a little less effective, but increased the yield from 87 to 91%.

GARDEN CULTURE OF TOMATOES.—In garden culture and in the greenhouse, tomatoes are usually trained to stakes or wires. In outdoor culture the Michigan experiment station found a pair of wires fastened to each edge of a 6-inch fence board a very serviceable form of trellis for tomatoes. When tomatoes are trained to stakes, one stake 6 feet high is used for each vine, and the vine pruned to one to three stems. Pruning to a single stem is generally recommended. This tends to increase the size of the individual fruits and the earliness of the crop.

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The Bee in Horticulture.

AN EXERCISE LED BY HAMLIN V. POORE, STATE INSPECTOR OF APIARIES, BIRD ISLAND.

Mr. Hamlin V. Poore: I was told my position in this matter would be to answer questions propounded to me pertinent to this subject, "the bee in horticulture." Now, if you have any questions to ask along that line, I shall be glad to answer them if possible.

Mr. Dewain Cook: Do bees spread blight?

Mr. Poore: No, positively no. Now, you may ask me why I take this positive stand on this question. I want to state that I have made personal observations extending over a period of twenty years in my own orchard. I have two trees there that have stood up for twenty years and have never shown the least sign of blight. At the time I planted those trees, I planted twenty others, and every one of those trees died, and three of them unquestionably from blight. Now, if bees spread blight, why is it that trees where there were no bees blighted equally with those where there were bees. and why is it that some trees where bees have free access to them are never affected by blight? Again, I have yet to find a record of any living man who knows what blight is or how it is communicated. Therefore, I say it, and say it positively, that bees do not spread blight.

Mr. Radabaugh: Are bees injurious to any kind of fruit blossoms?

Mr. Poore: No.

Mr. G. A. Anderson: I would like to ask a question in regard to this matter. When we have one of these blossoms here which shows a bee lighting on it and thereby showing how whole orchards may become infected in a few days' time, is that a conclusive test that bees are responsible for the spread of blight?

Mr. Poore: I have noted all experiments that have been made that bees do carry blight, and I have noted that they have covered a blossom after the bee had gone to it from a tree that was in a blighted condition, and it was stated that those trees became infected from the bee carrying the blight into the blossom. What person has any knowledge that that same blossom or that same limb upon which the blossom grew would not have blighted had the bee not gone to it, even if it had been covered up? I claim there is absolutely no evidence that bees communicate blight.

Mr. Probstfeld: I do not want to occupy much time because I have not studied this matter sufficiently to know much about it, but I simply want to say that I noticed one thing this year when the trees set fruit and the blight started in underneath and never touched the blossoms. It gradually reached the blossoms, and some of the apples were almost grown when the blight struck them, and they turned yellow. Furthermore, I had another tree that blighted very badly—it was a Richland Winter, and a Transcendent was near it and blighted—and this Richland Winter almost blighted to death. Some apples matured and some did not. In the next row there were five or six

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Transcendents that were just beginning to bear, and there was only leaf blight on them. How is it that those trees did not blight just as well then as the rest of them? When I had blight in my orchard before, there were no bees in the whole northwest. I planted one hundred and fifty Transcendent trees in 1873 and 1874, and those trees bore heavily; in fact, when I cut them down on account of blight, one was a foot in diameter, fifteen inches above the ground. I made the statement at the meeting here of the Horticultural Society that I did not know what blight was—I never saw any—and as though I were to be punished for that bold expression, they all blighted the next year,

Hamlin V. Poore, Minnesota State Inspector of Apiaries.

and I cut down every one of them. As far as bees are concerned, I have kept from ten to forty colonies for the last nine years, and so if blight is spread by bees I do not know that the fact has been proven.

Mr. Poore: I am not taking the position of saying what blight is or how it spreads, but I do deny emphatically that bees have anything to do with transmitting it in any way whatever. I do not believe a wise Creator would give the power or permit the bee to destroy that which is necessary to its existence.

Mr. Emmons: I want to ask a question: I live in Minneapolis, and I want to winter half a dozen colonies of bees, not as a speculation

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or an investment, but simply to furnish an abundance of honey for my own table and to give away to my neighbors and friends. Now, after they have made their honey, I do not like to kill them, and I would like to know whether there is a possible way of doubling up those colonies instead of killing them. For instance, I have twelve colonies in the fall, and I want to reduce them to six. Can I double up those swarms instead of killing them if I have good sized hives?

Mr. Poore: You can, and as soon as this discussion is over, you will have an opportunity to discuss that point in the meeting of the bee-keepers. This half hour is devoted to the subject of the bee in horticulture, and your question does not come within the scope of this discussion.

Mr. Andrews: I have a question upon which I would like a little information. I have noticed, since I placed bees in the orchard, a remarkable increase of spur blight in the Duchess and in the Wealthy, and do you think the bees have anything to do with spreading the blight?

Mr. Poore: I do not. The same thing has existed without any one believing that bees had anything to do with it.

Mr. Andrews: Is it not a fact that usually blight does not make its appearance until the season of the year after bees are done working on the blossoms?

Mr. Poore: My observation has been that blight shows very little until bees are entirely through working on the blossom; at any rate, that is my observation. It may once in a while be that you find blight before they are through working on the blossom, but as a rule you will find that it occurs afterward.

Dr. L. D. Leonard: Of what benefit are bees to the fruit grower, and, if they are of any benefit, should not the horticulturist in every way conserve the bees, so he will get the full benefit from them?

Mr. Poore: Assuredly, they are of direct benefit. In fact, exclude these from the fruit trees, and all the fruit you will get will simply be by chance pollination by those insects that do not depend entirely upon nectar for their existence. They go from bloom to bloom and pollenize the fruit upon which they alight, while the honey bee is the only insect I know of that goes from bloom to bloom, from morning to night, and its special object in nature is to pollenize these blossoms.

This summer I had my attention called to an orchard near Waseca. My friend said, "Look at the apples on the west side of those trees." I noticed there were apples on the west side of the trees but very few on the east side, and I asked him the reason. He said, "Last spring during the time of pollination, we had two or three days of strong east wind. The wind was so strong the bees could not work on the east side of the trees, and they worked entirely on the west side, and as a consequence all the apples in that orchard are on the west side of those trees." That is pretty conclusive evidence to my mind of the benefit the bees are to apple trees.

There is another orchard four miles from my place, and the trees are as large as my trees, and while I have been getting a good paying

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crop of apples from my trees, to my certain knowledge there has not been an apple on those trees I mentioned. What is the reason? It is because there is not a bee in reach of those trees. I heard the statement made in a paper in regard to two orchards that were planted near each other, one bore and the other did not, and on investigation it was found that a colony of bees had taken possession of one orchard while there were no bees in the other orchard. Altogether my experience has been such that if I could not keep bees for the honey they yielded I would keep them for the benefit they are to my fruit trees.

Mr. Baker: How long is pollen good on an apple tree generally?

Mr. Poore: I could not answer that question. There is often-

A swarm of bees at Hamline V. Poore's.

times a difference in the blooming period which would make it good for a longer time than if they all bloomed at once. I have not observed that feature closely enough to give a definite answer, but I think that question comes up later on in the meeting.

Mr. Probtsfeld: It is the individual blossom of which you are speaking.

Mr. Seth Kenney: It is my observation that the blossoms last about four days and then begin to fall.

Dr. Leonard: I would like to have this answer go on record on this question once more. It has been on record here several times in years gone by, but I know that it is a potent question even yet, and from the bee-keeper's standpoint it is a vital question: When shall we spray apple trees with a poisonous solution in order that the benefit

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to the trees shall be the greatest and that at the same time the bees shall not be destroyed?

Mr. Poore: That is a question I shall have to leave to fruit growers and horticulturists. I am satisfied that that will be a more serious question in the near future. We find that the southern part of the state must depend upon spraying for fruit, while in our section of the state we have no insects that necessitate the spraying, especially of apple trees; but when the time comes it will be a vital question. I wish to state to the horticulturists here today that this question should be taken up and seriously considered and that preparation should be made by the horticulturist to defend himself against these injurious insects and diseases. The statement has been made that blight is spread by bees. Now, if that is correct, I would like to have it demonstrated as an absolute certainty, and if it is an absolute certainty, let us have it on record, so that every bee-keeper and every fruit grower will know that the bee is at fault. I think this is a serious matter. If bees are essential to trees, no one would be so ignorant as to destroy them.

Dr. Leonard: I would like to ask Prof. Green whether any experiments along this line have been made at the experiment station and what the results have been as regards spraying at other times beside the time when bees are working on the flowers, and if spraying at such other times will not do the work of protecting the trees and apples just as well or better. This is a matter which seems simple to me, but which I would like to get on record in this society once more for the benefit of the bee-keepers in the state.

Prof. Green: I do not believe there is any difficulty in keeping bees in an orchard and carrying on spraying, so far as danger to the bees is concerned—not the slightest. The spraying that is necessary to be done in our orchards need not be done before the trees are in flower, but just after the petals have fallen, while the blossoms are still upright; there can be no question about that. It is an advantage, I believe, to have the bees visit the flowers, especially in our plum orchards. As to this blight proposition, I do not know of any experiment having been carried on at St. Anthony park or anywhere in Minnesota that throws any light on this subject of the connection of bees and blight. On the other hand, there have been a great many experiments made along this line by men like Dr. Weber, and by the United States Department of Agriculture, and they seem to show conclusively that blight does spread, not only by the honey bee but by a half dozen other native wild bees, and that blight spreads even if there is no honey bee nearby, and it comes by bees eating the sweet secretion from the blighted wood. I heard Dr. Weber say at one time that he had inoculated a bee with some germs of the apple blight—fire blight—in the nectar glands of the bee, and he had produced blight on the trees. That would seem to show the connection of bees with blight without question. I do not think we can lay it to the honey bee altogether, because we have a number of wild bees that may be doing the same thing all the time, and the same thing is perhaps the case with a number of other insects.

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SUMMER MEETING, 1910,

Minnesota State Horticultural Society.

(Joint Meeting With the Minn. State Rose Society).

A. W. LATHAM, SEC'Y.

A bright, sunshiny day, with here and there a cloud forming as the day advanced, but withal excessively hot—almost the climax of two weeks of hot weather—was vouchsafed to the society at its annual summer gathering on Thursday, June 23rd, the date selected. On account of the extraordinary heat of the previous two weeks it proved to be a little late for many of the articles that were to be exhibited, the dry weather having also very much to do with the rather light exhibit in flowers and almost no exhibit at all in strawberries. Only something like fifteen plates of strawberries were shown for competitive purposes, though Mr. Chas. Haralson, superintendent of the State Fruit-Breeding Farm, brought with him about 100 plates of seedling varieties—not a sample of what can be grown there, as the lack of rain had greatly dwarfed their development—but rather to emphasize the fact that we have such an establishment in successful operation. Tables had been arranged all around the walls of Armory Hall, and six or eight additional tables across through the center, for the various exhibits of peonies, roses and perennial flowers. While not filled with such a superabundance of flowers as on some occasions, they were fairly well occupied, and many beautiful specimens were shown, especially of perennials. Surprise was expressed on every hand that the Rose Society, which organization met with us jointly, was able to get together under such trying circumstances so satisfying a display. A list of the awards follows. It will not be amiss to note that the principal exhibitors were Rose Hill Nursery, Minneapolis; Jewell Nursery, of Lake City; D. W. C. Ruff, of Bald Eagle, and B. T. Hoyt, of Hamline. Many others added materially to making up the exhibit. Something under 400 entries had been made, an unusual number, but a considerable proportion of these were not shown.

Over three hundred people were present notwithstanding the extreme discomfort of the day, and every one seemed to enjoy the occasion most thoroughly.

Special mention should be made of the demonstration of spraying apparatus, which was conducted in an open space on the west side of the armory. There were sprayers there of different makes, sizes and uses, and these were in operation during the forenoon. Prof. A. R. Kohler also conducted a demonstration lecture as to the prepara-

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tion of various spraying materials. Probably seventy-five of those in attendance at the meeting were present at these demonstrations, and much practical knowledge was thus acquired.

At 12:30 something less than 300 sat down to dinner together in the station dining hall to a satisfying repast in which strawberries and strawberry preparations cut a large figure.

At 2:00 o'clock the regular session of the society was held, at which a number participated, all being, however, of an ex tempore character. Professor Green, our president, opened the meeting with a few appropriate and cheery words, calling at once upon Mr. J. M. Underwood, president of the State Agricultural Society, to speak of the prospects of horticulture at the coming state fair. Mr. Underwood emphasized particularly his interest in the horticultural department at the fair and urged the members who are growing fruits, and especially those who are growing flowers, to take advantage of the increased premium list and the fact that all of the late agricultural building was to be given up this year to horticulture, and assist in making the display the first time under such large conditions a thorough success. Mr. Underwood also spoke of the possibility of the Agricultural Society and the Agricultural College being at some time united in a sense that would make the whole one grand exposition.

Mr. A. G. Long, our reporter—not reporting this meeting, however—entertained the audience in his inimitable way for a few moments, what he said not pertaining to the subject announced nor much of anything else, but we all enjoyed it just the same.

Mr. A. Brackett, of Excelsior, who is traveling the state over summer and winter in the interest of the farmers' institute work, spoke encouragingly of the apple industry in Minnesota as compared with that of other parts of the United States, and congratulated himself and others especially that in the neighborhood where he lives, about Lake Minnetonka, there is to be a fair crop of apples this extraordinary season. Comparing the probability of success here with that on the Pacific Coast, he emphasized his faith in orcharding in this region on account largely of the nearness and size of our home market.

Mr. Underwood at this point spoke briefly of the way in which the fifteen or twenty plates of fine, large specimens of apples of ordinary Minnesota varieties which were in exhibition in the hall by the Jewell Nursery Co., had been kept without any special cold storage, being preserved in a cellar in the side of a bank that had been formerly used for machinery for a gas lighting plant. The apples were not at all dwindled and appeared to be in the finest condition. A

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plate of "Keep-Till-June," also in good condition, was shown by Mrs. M. A. Knowles, which had been kept in her cellar without special care.

Mr. Chas M. Loring, one of the pioneers of the society, who spends his winters in California, said very pleasantly that "there is nothing in California in winter so beautiful as there is in Minnesota in summer," and in other ways he emphasized the advantages of home life in this state. He spoke also of the probable disapointment of many who were going to the coast buying apple orchards at large prices, many of whom would likely be glad enough to return here at some later time. Mr. Loring counseled our fruit growers to take more pains in marketing their fruit, making it attractive, and in this way increasing the profits of their occupation.

Mrs. H. A. Boardman, president of the Rose Society, in response to a call, expressed her enjoyment of the meeting and her satisfaction with the arrangement by which the Rose Society had met with the Horticultural Society, and hoped it would be made a permanent arrangement.

A. F. Woods, dean of the Agricultural Experiment Station, coming into the hall at this time, was called upon and said some pleasant words of the value of the Minnesota Horticultural Society, which he stated was more talked about than any other organization of its kind. He spoke briefly of marketing fruit, of the use of lime sulphur as a spraying mixture, etc., emphasizing the importance of keeping in touch with improvements in this direction.

Professor Green called attention to the exhibit of strawberries in the hall from the fruit farm, and stated there would have been several hundred cases of strawberries gathered there if the weather had not been so unfavorable.

A few questions from the "question box" were answered briefly.

What is the best fertilizer for peonies? Mr. Ruff replied that stable manure is the best fertilizer, but it should not be mixed with the earth when the peonies are planted, but instead put on the ground in the fall and worked into the ground in the spring.

Responding to another question as to why peonies don't blossom, Mr. Ruff suggested dividing them and changing their location.

Can the foliage of oriental poppies be cut off as soon as they bloom without harming the plants? Answered by Mrs. F. H. Gibbs—"Let the foliage ripen a little before it is cut off."

Is there any remedy for aster wilt? Answered by Dean Woods: Aster wilt is due to a fungus which also attacks many other plants. It gets into the soil and lives there indefinitely. Change the soil and

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don't put asters in that soil again or anything closely related to the aster.

Mr. Wyman Elliot spoke briefly of the season, referring to a similar season way back in 1864, the year before the writer came to the state, when there was a very severe drouth. Cabbage was sold at twenty-five cents a head and onions three for a nickle.

Mr. Elliot also said pleasant things of the flowers and emphasized the value of irrigation for such seasons of drouth as we were then passing through.

Mr. D. W. C. Ruff, called upon to speak of his flowers, mentioned three varieties of peonies, LaSublime for red, Floral Treasure for pink and Duchess de Nemourse.

There was no shorthand reporter present, so that the above notes are not verbatim, but the thought of the speaker was, we believe, secured.

At 4:00 o'clock the meeting adjourned, and notwithstanding the comparatively light exhibit of flowers there seemed to be enough for every member to carry away an armful as usual. So ended one of our most enjoyable days.

Award of Premiums, Summer Meeting, 1910.

ROSES.

Article.	Exhibitor.	Premium.	Amount.
Collection	J. P. Brown, Excelsior	First	$10.00
Collection—6 named varieties	Rose Hill Nursery, Minneapolis	First	6.00
Collection	Mrs. H. B. Tillotson, Eureka	Third	4.00
Collection	Jewell Nursery, Lake City	Second	6.00
Collection—6 named varieties	"	Second	4.00
Collection	B. T. Hoyt, St. Paul	Fourth	2.00

THREE NAMED VARIETIES—WHITE, PINK, RED.

White	Rose Hill Nursery, Minneapolis	Second	1.50
Pink	"	Second	1.50
Red	"	Second	1.50
White	Mrs. H. B. Tillotson, Minneapolis	Third	1.00
Pink	Mrs. H. B. Tillotson, Minneapolis	Third	1.00
Red	"	Third	1.00
White	Jewell Nursery, Lake City	First	2.00
Pink	"	First	2.00
Red	"	First	2.00

COLLECTION RUGOSA AND RUGOSA HYBRIDS.

Collection of Rugosa and Rugosa Hybrids	Jewell Nursery Co., Lake City	First	3.00

MOST BEAUTIFUL ROSE—LARGEST ROSE.

Most beautiful rose	Rose Hill Nursery, Minneapolis	First.	Bronze Medal
Largest Rose	"	First	2.00

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VASES OF ROSES.

Ulrich Brunner	Thos. Redpath, Wayzata	Third	$0.25
Prince Camille de Rohan	Mrs. F. H. Gibbs, St. Anthony Pk.	Second	.50
Gen. Jacqueminot	"	First	.75
Margaret Dickson	"	First	.75
Magna Charta	"	Third	.25
Madam Gabriel Luizet	"	Second	.50
John Hopper	"	Third	.25
Madam Plantier	"	Third	.25
Gen. Jacqueminot	Rose Hill Nursery, Minneapolis	Third	.25
Margaret Dickson	"	Second	.50
M. P. Wilder	"	Second	.50
Jules Margottin	"	First	.75
Magna Charta	"	First	.75
Madam Gabriel Luizet	"	First	.75
Baroness Rothschild	"	First	.75
Anna de Diesbach	"	First	.75
Ulrich Brunner	"	First	.75
John Hopper	"	First	.75
Madam Plantier	"	First	.75
Prince Camille de Rohan	Jewell Nursery, Lake City	First	.75
Gan. Jacqueminot	"	Second	.50
M. P. Wilder	"	First	.75
Magna Charta	"	Second	.50
Paul Neyron	"	First	.75
Gabriel Luizet	"	Third	.25
Anna de Diesbach	"	Second	.50
Ulrich Brunner	"	Second	.50
John Hopper	"	Second	.50
Baron de Bonstetten	"	First	.75
Karl Druski	"	First	.75
Jules Margottin	"	Second	.50
Karl Druski	E. A. Farmer, Minneapolis	Second	.50
Rosa Rugosa (white)	B. T. Hoyt, St. Paul	First	.75
Madam Plantier	Mrs. J. M. Scharff, St. Paul	Second	.50

O. J. OLSON, AUG. S. SWANSON, Judges.

PEONIES.

Collection	D. W. C. Ruff, St. Paul	First	8.00
Collection	Rose Hill Nursery, Minneapolis	Second	6.00
Collection	B. T. Hoyt, St. Paul	Third	4.00

VASES OF PEONIES.

Festiva Maxima	D. W. C. Ruff, St. Paul	First	1.00
Light pink	"	First	1.00
Dark pink	"	Third	1.00
White	"	Second	1.50
Red	"	Second	1.50
Light pink	Mrs. Frank Moris, Lake Elmo	Third	1.00
Light pink	Rose Hill Nursery, Minneapolis	Second	1.50
Dark pink	"	First	2.00
Red	"	First	2.00
Dark pink	B. T. Hoyt, St. Paul	Second	1.50
White	"	First	2.00
Red	"	Third	1.00
Dark pink	Mrs. J. M. Scharff, St. Paul	Fourth	.50
White	W. O. Washburn, St. Paul	Third	1.00

FRED NUSSBAUMER,
LOUIS BOEGLIN,
Judges.

ANNUALS AND PERENNIALS.

Shasta daisies	Mrs. H. Holt, Minneapolis	Second	1.25
Lilies	W. O. Washburn, St. Paul	First	2.00
Columbines	B. T. Hoyt, St. Paul	Second	1.25
Pansies	Mrs. J. M. Scharff, St. Paul	Third	.75
For-get-me-nots	Mrs. R. R. Odell, Minneapolis	Third	.75
Sweet peas	F. F. Farrar, White Bear	First	2.00
Geraniums	Mrs. H. A. Boardman, St. Paul	First	2.00
Pansies	"	First	2.00
Iris	B. T. Hoyt, St. Paul	Second	1.25
Lilies	"	Second	1.25
Foxgloves	"	Third	.75
Sweet William	F. H. Ellison, Minneapolis	Third	.75
Pansies	"	Second	1.25
Delphinium	E. A. Farmer, Minneapolis	Third	.75
Sweet William	"	First	2.00
Canterbury Bells	"	Third	.75
Foxgloves	"	Second	1.25
Shasta daisies	"	First	2.00
Iris	D. W. C. Ruff, St. Paul	Third	.75
Foxgloves	"	First	2.00
Sweet William	Mrs. Frank Moris, Lake Elmo	Second	1.25
For-get-me-nots	"	First	2.00

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Article.	Exhibitor.	Premium.	Amount.
Sweet peas	A. Brackett, Excelsior	Third	.75
Iris	Mrs. H. B. Tillotson, Eureka	First	2.00
Delphinium	Mrs. F. H. Gibbs, St. Anthony Pk.	Second	1.25
Shasta daisies	D. W. C. Ruff, St. Paul	Third	.75
Oriental poppies	"	First	2.00
Flowers by children	Mrs. John Gantzer, St. Paul	First	2.00
Delphinium	J. P. Brown, Excelsior	First	2.00
Sweet peas	"	Second	1.25
Canterbury bells	"	First	2.00
Canterbury bells	Mrs. J. F. Fairfax, Minneapolis	Second	1.25
Columbines	Mrs. Edwin W. Gould, Minneapolis	Third	.75
Oriental poppies	Mrs. Chas. Krause, Merriam Park	Second	1.25

FRED NUSSBAUMER,
LOUIS BOEGLIN, Judges.

STRAWBERRIES.

Collection 3 named varieties	Flora Moeser, St. Louis Park	First	3.00
Collection (not less than six varieties)	F. H. Ellison, Minneapolis	First	5.00
Best named variety	Mrs. John Gantzer, St. Paul	First	2.00
Seedling	A. Brackett, Excelsior	Second	2.00
Seedling	Mrs. M. A. Rohan, Minneapolis	First	3.00
Dunlap	A. Brackett, Excelsior	Second	0.75
Dunlap	F. H. Ellison, Minneapolis	First	1.00

WYMAN ELLIOT, Judge.

SECRETARY'S CORNER

FRUIT FOR THE STATE FAIR EXHIBIT.—Secretary Latham, who is again to fill the position of superintendent of horticulture at the state fair, would be interested to hear from any who have fruit that can be exhibited in the horticultural department at the coming state fair. Many of the orchards of the state have little or nothing to exhibit, and the field is narrowed down to a comparatively small number on account of circumstances with which we are all familiar. Members are earnestly urged to have this matter in thought and make preparation to do all possible to maintain the credit of the society at the coming state fair.

MEETING OF THE EXECUTIVE BOARD.—The regular semi-annual meeting of the executive board was held in the Secretary's office on the evening of June 22nd. A number of important matters were under consideration, perhaps the most important of which was an appropriation of $25 for each of the vice-presidents of the society, the money to be used to pay expenses connected with travelling throughout the congressional district examining orchards, seedling fruits, or any other matters of interest to horticulture—in pursuit of material to be used in connection with the annual report. There are nine vice-presidents in the state, one for each congressional district, and this appropriation should give opportunity for the gathering of considerable valuable information.

A vice-president was appointed to fill the vacancy in the third district caused by the recent death of Mr. W. L. Parker. Mr. H. J. Baldwin, of Northfield, received the appointment.

Two new society trial stations were created, one at Madison, with M. Soholt as superintendent, and another at Nevis, in Hubbard County, Jas. Arrowood, superintendent, the latter really to take the place of the station located in the Red River Valley under superintendency of Mr. O. J. Hagen, who has recently removed to the Pacific Coast.

Six of the eight members of the board were present at this meeting, including Messrs. Elliot, Green, Cashman, Wedge, Moyer and the writer.

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MAIN ORCHARD OF JEWELL NURSERY CO., LAKE CITY, IN BLOOM.

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THE MINNESOTA HORTICULTURIST

Vol. 38 AUGUST, 1910. No. 8

Death of Our President

Samuel B. Green Passes July 11th, Aged Fifty-one Years.

Early on Monday, July 11th, a call over the phone from Dean Woods, of the State Experiment Station, announced to the writer the sudden death of Prof. Green. It seemed impossible that it could be true. On Tuesday the week before Prof. Green made his last visit to this office. He was a frequent visitor here and seemed to enjoy much the opportunity for relaxation which it gave him, talking with me at those times with much freedom of whatever phase of his work was at that time uppermost in his mind. As he often said, "I come in here to rest; it does me good." We talked on that day of his approaching visit to the forestry school at Itasca Park, of the work at the state fruit-breeding farm, where so much fruit has been lately maturing in the greenhouse. He spoke also of an expected visit soon east with his wife to a nephew in Maine, for whom he had recently purchased a farm there. He did not look as well as usual, which I ascribed to a recent sickness of some weeks ago, when for four or five days he was confined to his bed from what he called acute dyspepsia, the first time I had ever known him to be ill for a moment. We always looked upon him as an ideally healthy man with his extraordinary vigor and ever present appearance of perfect health. At that time he was intending to have gone to Itasca Park that day I believe but postponed the visit for a few days on account of the health of his adopted son, Nathaniel, who was then taking expert treatment. So instead he went to Cloquet the next morning for a day and was back Thursday. Late Friday afternoon he called me up over the phone, saying that he hadn't anything special to say but wanted to hear my voice and speak with me a minute, that he was going to Itasca Park the next morning with Mrs. Green for an absence of about a week to look things over and did not expect to be gone more than that length of time and bade me good-bye. This is the last time that I heard his voice.

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The message from Dean Woods did not give particulars of his death, but a personal interview with Prof. Cheyney, his assistant in the forestry school at Itasca Park, on the day of the funeral brought the facts.

It was soon after breakfast, before nine o'clock in the morning, that he was looking the grounds over, and in a barn that had just been constructed which he was inspecting he suddenly collapsed. He came to, however, at once and was lifted to his feet and assisted outside, remarking that he was all right, and again he spoke of what a good barn Mr. Stillwell had made. A second collapse followed, and he lapsed at once into unconsciousness from which he never recovered. Prof. Cheyney had been called with his first attack and came running, but he was practically dead when Prof. Cheyney arrived at his side.

The body was brought from Itasca Park to Park Rapids that day, a distance of some thirty miles, and the next morning—Dean Woods, Mr. Elwell and wife and others having gone forward to meet Mrs. Green and the body at that point—came to Minneapolis, arriving at 5:30 in the evening. Many friends of the deceased met them at the depot, not only from the Agricultural School but from other points in the vicinity. Mr. Wyman Elliot and the writer represented the Horticultural Society at that time, and, with Mr. J. M. Underwood also, as honorary pallbearers at the funeral.

With the exception of Mr. L. R. Moyer, who could not be reached by phone, all the members of the executive board of the society were in attendance at the funeral on Wednesday at 3:00 o'clock. The funeral was held in the Congregational church at St. Anthony Park, of which our friend was an active member, and the pastor, Rev. Mr. Davies, officiated. His funeral discourse was followed by a talk from President Northrup in which he reviewed briefly the more salient points of Prof. Green's connection with the State University. Mrs. Green went east with the remains on the evening following the funeral, the interment I understand to be in Mt. Auburn Cemetery, Boston, and it seems likely that Mrs. Green will make her home there for the future with some of the members of the family.

I thought our membership might be interested to know these particulars, and so I have recited them apart from the regular form of biography which will appear a little later in our periodical accompanied by portrait from a recent photograph which is not yet at hand.

We are unable yet to realize the death of this dear friend. Time alone must accustom us to the change in our situation.

A. W. LATHAM, Sec'y.

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The Minnesota Nursery

AN EXERCISE CONDUCTED BY E. A. SMITH, VICE-PRESIDENT, JEWELL NURSERY CO., LAKE CITY, MINN.

Mr. E. A. Smith: I use the term Minnesota nursery in its broadest sense as applying to this entire northern country. The Minnesota, or northern, nursery is a necessity, for nowhere else can there be grown hardy stock in quantity and variety that is adapted to this great northern country. The merits of northern grown stock for the north, compared with that grown in the south, has been threshed over and discussed so often that it is generally understood and accepted theoretically and practically that northern grown stock is better for the north. It costs more as a rule to grow stock in the north than it does in the south on account of the shorter seasons and extreme temperature, which necessitates special winter protection.

In starting a nursery in the north, first get the best location possible. By location is meant the best soil, the best altitude, drainage and convenience to good transportation. If you think it is easy to find such a location, try to secure it—and then see that the work is well done. The result will be the best nursery stock that can be grown anywhere.

It is safe to say that two-thirds of the nursery stock that fails to grow has been injured through neglect somewhere. From the time the seed is sown until the tree is grown the greatest care must be exercised. What this care means can only be appreciated in its many details by the nurserymen, who are the practical pioneers of horticulture, and who are doing so much to beautify and improve both city and country. They have borne the burden; to them much credit should be given.

Briefly, I have outlined the work of the Minnesota nursery and hope that a number of questions will be asked and answered. Here are some questions that have been handed in, which I am supposed to answer:

"How can you tell the Northwestern Greening apple from the Patten Greening?"

Mr. Smith: That is a question for the judges of fruit to answer. The Patten Greening tree in the orchard is somewhat crooked. The Northwestern Greening is a straight tree and very easy to tell from Patten's. The apples also are quite different in appearance and easy to determine.

Question: "What shall I do with my Peerless orchard? The trees look well in the spring, but when they do blossom the blossoms fall off, and the trees bear very little fruit."

Mr. Smith: I see they have cut out the Peerless from the planting list this year. That is one trouble with the Peerless; it is a shy bearer, and the best thing to do would be to top-work the trees or to dig them out and plant something in their place that would bear. Spraying might help the difficulty.

Question: "What would you recommend for top-working?"

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Mr. Smith: That is a question I want to refer to some one who has had experience in top-working the Peerless. I want to ask if anyone has had any experience in that direction.

Mr. John Nordine: The Peerless does fine for top-working with the Okabena, also the Hibernal.

Mr. Martin: I want to work on the Peerless.

Mr. Nordine: I should think the Jewell's Winter and the Lowland Raspberry fine trees to work on the Peerless.

Mr. Ludlow: What are the main causes of failure in orcharding in Minnesota?

Mr. Smith: I would rather have some experienced orchardist answer that question. Our observation is that one of the principal causes is neglect on the part of the owner of the orchard. In our locality (Lake City) we spray twice. We have people around us who, about the time apples are ready to pick, begin to look around for a market; as a consequence the apples are left on the ground to rot. That time is too late to think about marketing. Barrels should be purchased in the spring, the grower should procure pickers, and other necessary arrangements should be made, and if all these things are done in season there will be no trouble in selling the fruit at a good price. In our own orchards we had some five thousand bushels of apples; not far away there were some people trying to get us to take their apples off their hands at 25 cents a bushel. They had fallen on the ground. It was simply neglect on their part that they did not get their apples to market and get a good price for them. Neglect is the chief cause of failure.

Question: "Is the Wonderberry a success?"

Mr. Smith: That is a fruit that grows from seed. It is of the potato family, and we have had no experience with it. It is an insipid tasting berry, although some claim it makes good pies and sauce. It is a wonderfully prolific berry, but from our standpoint it is not a good fruit for market.

Mr. Ludlow: I cannot tell the difference between the Wonderberry and the common nightshade that grows in the fields.

Question: "What is the Pear apple and the Sheep's Nose apple? Are they the same thing as the Malinda?"

Mr. Smith: Back east it used to be the Gillflower, but it is not supposed to be hardy in this section of the country. In the west the Malinda takes its place. There is also the Pearmain apple.

Mr. Hunter: Have you had any experience in propagating the native blackberry?

Mr. Smith: We have not; we propagate only the well known cultivated varieties.

Mr. Cook: Does it not root from the tips?

Mr. Smith: I don't know; I never saw the native blackberry except in the woods or on the hillsides.

Question: "When is the best time to trim apple trees in the nursery?"

Mr. Smith: I think June is the best time. The wounds heal over quickly then.

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Mr. Hunter: Do you apply that to all kinds of trees?

Mr. Smith: We trim our trees in June. Some think October and March is a good time, but we prefer June because the wounds heal over quickly. The trouble with trimming in October is that you open sores on the limbs, and the moisture works out and will cause decay, which is not the case when trimmed in June.

Mr. Hunter: Would it not be all right to trim at that time if you painted over the stub?

Mr. Smith: Yes, if that were done they could be trimmed at any time, except when sap runs in the spring.

Mr. Harrison: I had very good results with trimming in March; the bark would grow right over the wounds.

Mr. Anderson: If I cannot trim then, I prefer to trim in June.

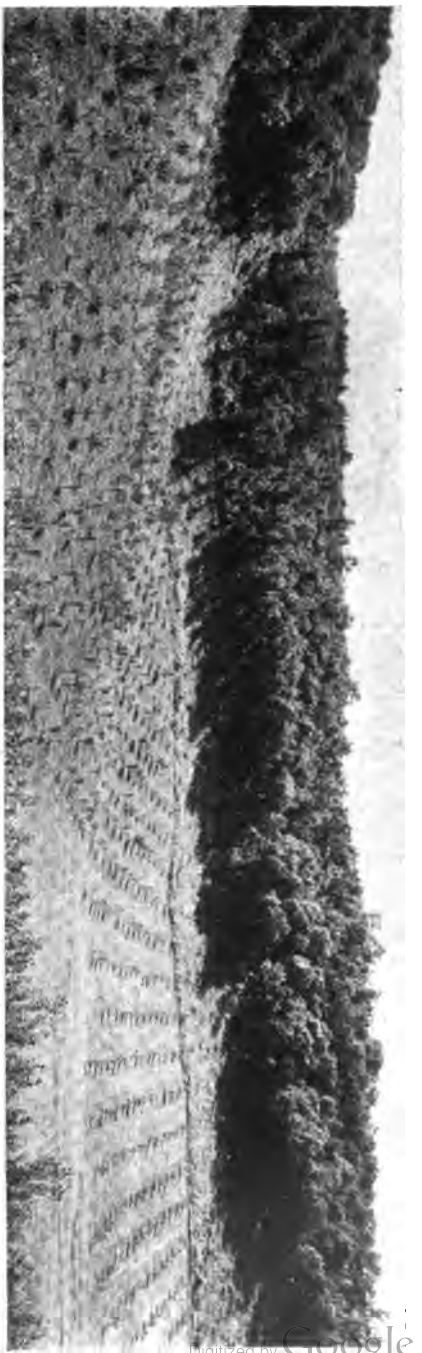
Mr. Pond: Will it not bleed in the spring?

Mr. Smith: If you trim it early enough it will sear over.

Mr. Anderson: A maple tree will bleed as long as there is frost.

Mr. Arrowood: If you were to set out a commercial orchard, what location would you prefer if you had your choice?

Mr. Smith: We have two commercial orchards, one is planted on the level and one on a hillside on a north slope. The north slope is altogether better, owing to the fact that it has better air drainage and better circulation. We get



Hill-side orchard, Jewell Nursery Co., Lake City.

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better apples, they ripen later, they color better and keep better, and they are better in every way than apples grown on the level. We shipped two barrels of apples (this may be of interest to you, and it is something Minnesota may be proud of), one barrel of Wealthy and one of Northwestern Greening, to Spokane to the Second National Apple Show, and took first and second prizes. One hundred and fifty dollars was the premium. We could have picked those apples from the orchard that grew on the level, as we had good fruit there, but the higher altitude produced the best fruit.

Mr. Pond: Do your trees yield well?

Mr. Smith: They yield well; they bear all they possibly can stand. I never saw such loads of apples in an orchard.

Mr. Pond: Do you cultivate?

Mr. Smith: When we plant trees on the hillside, we dig down on the upper side, say a surface space six feet in diameter, making a level place, in the center of which we plant the tree; and then we dig shallow lateral ditches (indicating), so that the water, instead of running away, runs towards the tree. It is almost an irrigation system. The soil is clay loam, and that is also one reason why we get better fruit there; the water does not seep away so quickly.

Mr. Anderson: To what extent do you fertilize the soil after making the hole?

Mr. Smith: We do not use any on the bluff orchard. On the level orchard we fertilize each year. We haul on well rotted manure, and the moisture and liquid sink into the soil, and later we plow it under. Here is something that people in this state and section of the country must realize. They are coming into competition with very fine looking apples from the northwest. You can tell at a glance those apples that are grown in the northwest. You must have something besides quality and flavor in an apple; you must have good looks.

Question: "My orchard is sandy, especially there is sand in the high places. Would you think it a good idea to put clay in the holes when you dig them?"

Mr. Smith: It is all right to do so, but it is not necessary.

Mr. Peterson: I thought once of putting a foot or so of clay in the hole.

Mr. Smith: It will be a benefit, but it is not necessary if there is a clay sub-soil.

Mr. Ludlow: If the trees in the orchard are well set and have got a good start, after they get to be five years old is it a good plan to keep the orchard in cultivation or seed it down? Does it improve the fruit any to keep on cultivating?

Mr. Smith: Some prefer to continue cultivation. We cultivate our orchard on the level because we can do it, but the bluff orchard we cannot cultivate, so we simply scratch around the tree with a fork after a rain. Seeding down is not generally recognized as a good thing for an orchard, especially if the soil is light. In that case you must cultivate it to get good fruit, but if it is in clay you do not need to cultivate to so great an extent.

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Mr. Ludlow: In my orchard there has not been a plow or harrow or anything of that kind for seventeen years. It is seeded down to bluegrass. That keeps the roots of the trees from freezing and the trees fruit every other year. Last year I fed each tree with a big load of manure, all the large trees, and the old Okabena was one of them. Every other year I give it a load of manure. That helps the fruit because the fertilizer gets down to the roots, and the bluegrass holds the moisture. I notice they have set a nice lot of buds for another year. I have practiced that for fifteen years and have never failed to get a good yield.

Mr. Schutz: When do the trees set their buds?

Mr. Ludlow: They set them in the fall or in the summer.

Mr. Elliot: They set their buds in the month of August.

Mr. Ludlow: The mulching I put on in the fall rots away the next summer.

Mr. Elliot: Tell them how you prevent worms getting in your apples.

Mr. Ludlow: I do not have wormy apples. When I take a lot of apples to town I say to my customers. "I will give you a dollar if you find a worm in that lot of apples." I do it with my sheep. My farm is run by two cranks—I am the fruit crank and my boy is the stock crank. We work together very harmoniously. My sheep are as nice a flock as I ever saw. I put my sheep in the orchard once a week through the season, and when they get through with the orchard every weed is taken out, and it looks as though the lawn mower had run over it twice a week. It leaves no room for eggs of insects to lie over in the cold of winter. I never have any wormy fruit. What makes me think this is the reason is that one of my neighbors who has more of an orchard than I have and more Wealthy apples, and who in the past has grown just as nice apples as anybody, has of late years not had the success I have had. He sold his place last year, and I saw the man who picked the apples from the trees. They were fine looking apples, but they told me when I was there last Saturday that there was not an apple but had from three to five worms in it. That orchard was left to take care of itself. It is full of nettles, morning glories, and everything of that kind, and it is almost impossible to get into the orchard. The trees look nice and thrifty, but it proves to me there is left a place for insects to lay their eggs, and it offers them a shelter.

Mr. Schutz: Do you salt your sheep under the trees?

Mr. Ludlow: No, sir, I put it in the troughs down the lane, and they come to eat it there and then they go down in the orchard.

Mr. Elliot: You only run those sheep in the orchard twenty-four to thirty hours?

Mr. Ludlow: Usually I take them in at night when I drive up the cows to milk.

Mr. Elliot: It is not continuously pastured?

Mr. Ludlow: No, sir.

Mr. Eliot: That is the point I want to get at.

Mr. Ludlow: Two hundred and eighty sheep on an acre and a half would soon get poor. I dare not tell my farmer friends how

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this is done. A man asked me, "How do you keep your orchard so clean and nice?" I said, "Sheep do it." Last summer he had five hundred. He would not use a herder and pony so he put them in a quarter section field opposite the house. He said, "Ludlow puts his sheep in the orchard, and I can put mine in my orchard." He kept these five hundred sheep in a three-acre orchard, and one morning he said, "I must go and see what is going on down there," and when he went down there, he found thirty-eight of his choicest trees, that had borne on an average ten bushels of apples to the tree, were skinned as high as the sheep could reach.

Mr. Peterson: Do Malinda apples sell well, and would they do well to top-work on the Peerless?

Mr. Elliot: The Malinda is a late keeping apple, and at this season of the year it is rather insipid, but take it next March or April, you will find it one of the best. The boys and girls who do not have many apples think it is a very good apple. I would advise you to put in quite a few Malinda.

Mr. Tingley: Manuring an old orchard is all right, but if you treat a young orchard that way you will kill 90 per cent of the trees.

Mr. Ludlow: That is just the reason I don't want to tell people what to do. I use my judgment in the thing.

Operating a Trial Station.

AN EXERCISE CONDUCTED BY PROF. SAM'L B. GREEN.

Our trial stations are organized for the purpose of encouraging certain members of our society in horticultural experimentation. We are not in a position, nor probably is it best under our organization, to attempt to pay any salary to the heads of these stations. We do, however, furnish small amounts of material for experiment purposes.

In my opinion these stations should be encouraged to specialize along those lines in which the superintendent is most interested. These stations are widely distributed over the state, and it is a question for each superintendent to determine how to make his work most helpful to the horticultural interests of his district. We do not regard them as experiment stations, but rather as trial stations, and we do not expect them to carry on difficult experiments. They have done their best work along the line of variety testing. A good illustration of this specializing feature is the station at Montevideo, of which Hon. L. R. Moyer is superintendent. He has paid especial attention to ornamental plants in western Minnesota, and his reports have been of great interest and helpful to the people of that section. The same could be said of Mr. Dewain Cook's work with fruits in southwestern Minnesota, and so I could go on and refer in a complimentary way to all of our trial stations.

I have been asked to speak upon the trial of pears at these stations. It should be more generally known that there are a number of varieties of pears that seem sufficiently hardy for Minnesota so far

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as resistance to the climatic conditions goes, but they have, almost without exception, succumbed to the fire blight. Some of the old Russian varieties, such as Bessemianca and Orel, stood the climate for many years but finally blighted to death. At our station now we have one pear tree, which has never fruited, but it bloomed last year for the first time. This was grown from a barrel of small crab pears that I obtained from the Arnold Arboretum about twenty years ago. I lost all of them except this one, and this is now five inches in diameter and perhaps twenty feet high. It is a very upright grower. The Flemish Beauty is grown in a small way in parts of Minnesota. We have grown it at the Central station, also the Kieffer. The The Bessemianca may be grown on apple roots by root-grafting or any of our pears may be grown on the wild thorns.

Mr. Dewain Cook: You can grow them on top of the apple.

Prof. Green: Have they made a good union on the apple?

Mr. Cook: They made a good union.

Prof. Green: I know that pears of some kinds may be successfully root-grafted on the apple.

Mr. Cook: They made as good a union as the apple. It is one I got from Brown, of Mankato. He has them, and he thinks they are very fine.

Prof. Green: Where did he get them?

Mr. Cook: I don't know.

Prof. Green: Are they seedlings?

Mr. Cook: I think so, I don't know.

Prof. Green: There may be a future for top-working pears on the apple, but I have no faith in securing permanent trees in this way.

Mr. Crosby: I have seen them grafted on the mountain ash; they were large and fine.

Prof. Green: I have understood that in Scandinavian countries the mountain ash is commonly used as a stock, but I have not succeeded in grafting pears on either the European or the American mountain ash.

Mr. Probstfeld: What is the crataegus? Is it the native thorny tree known as thorn apple?

Prof. Green: Yes, it has long, black thorns and bears the small, round fruit known as thorn apples.

Mr. Cowles: Does the pear grow fast on it?

Prof. Green: Yes, it makes a good union after a while. I had, as stated, a lot of seedlings, but all I have to show for them is one pear tree. It may amount to something, but I don't expect it.

Mr. Probstfeld: Of all the seeds I planted, only thirteen or fourteen grew. I have some five years old, and they are not more than two feet high. One was five feet high at one time, but it blighted back a year ago, so now it is only about two feet high.

Prof. Green: At the fruit farm we have 10,000 seedling strawberries this year, with a lot more coming on, and if any of the trial station people want to try seedlings, we shall be glad to furnish them. We have not felt like sending them out: in fact, we had not thought of doing so. This year we raised about twenty thousand strawberry

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seedlings, and of those we planted out ten thousand, and ten thousand went to waste; we could not take care of them.

Mr. Probstfeld: How many seedlings can you get from one strawberry?

Prof. Green: Well, I have never counted the seeds, but I should say you could get probably a hundred. It is easy enough to get strawberry seedlings, especially the way we handle them at the farm. We crush them in sand, about March first, when they ripen in our greenhouse, sow the seed at once, and by the first of July we have nice plants for planting, and the next year we get fruit from them. This year we are going to cross plums, raspberries and strawberries in our greenhouse.

Mr. Crosby: I believe pears are going to be a success in this state.

Prof. Green: I should not be surprised, but apparently that time is a good ways off; that is, I mean anything good in pears.

Mr. Crosby: They have got to be acclimated.

Prof. Green: Well, we have got to get good varieties.

Mr. Crosby: Mr. Kellogg stated he raised the Bartlett.

Prof. Green: We have never raised the Bartlett, but Mr. Kellogg lives in a more favored section than we do. To get back to this strawberry question: I don't feel it is quite right to expect the trial station superintendents to test strawberries, but if any of you want a thousand or two to plant out, you are welcome to them. I see most of you shake your heads on that proposition. At the summer meeting last June we exhibited a hundred plates of strawberries, and good strawberries, ripe at that time. We selected them from beds that had something over two thousand seedlings in fruiting, and they made a good showing on the table. We had a hundred varieties that were good, large strawberries, and they showed up very well. There is no question but what vegetation will respond to intelligent care.

Mr. Cowles: What varieties do you grow?

Prof. Green: We have been using the Dunlap more than anything else for crossing. We cross it with the native wild and the Alaska wild strawberry. The idea is to secure hardiness and vigor, and we thought this would cross well with the wild forms. We have a lot of them that will fruit the coming year. I have a statement prepared of just the number of plants of each kind that fruited. We have had many crosses of the Dunlap with the Alaska, of which many varieties were selected as worthy of further trial, and many other crosses worthy of further trial. We have perhaps fifteen or sixteen distinct crosses. We expect to find something especially desirable from our crosses between the Japanese and native plum. We are making a strong point of this work. Mr. Haralson showed you a seedling plum tree that we crossed at the late Nils Anderson's place at Lake City three years ago. He had the Americana and other varieties growing side by side. We bought all his plums that were good. Among the seedlings from this lot there are some plants that are wonderfully vigorous in their growth, but what the fruit will be remains to be seen. We are doing a lot of work along that line, and if there are any trial stations that want to take this

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up, they will have a chance to do so. It seems to me that this field is so interesting that some of our rich men who are spending their money for trotting horses and automobiles and fancy stock, and things of that sort, ought to become interested in it. The chances for something new in this line are so much better than in live stock, it seems to me that every one of a studious habit would get more fun out of it, if that is what they are after, than they would out of live stock.

Mr. Probstfeld: Why is it that the majority of the seedlings we grow from any kind of fruit are inferior and yet some of them are an improvement over the original?

Prof. Green: That is a theoretical subject upon which you do not want to get me started. The natural tendency of organisms, both plant and animal, is to be different from their birthmates, and yet when they are grown for a number of years in the same line it is possible to fix their quality so they come reasonably true from seed, and we say they are a fixed type. Now, under natural conditions, as we have them, there is the most rigid kind of selection going on all the time, and the strongest are the ones that survive; but the tendency even then, if you give them an opportunity, is to be different in some respects—but under a given environment the tendency is to come true to a long line of uniform heredity. We will say the dog has come from the wolf; the wolf-type is then what would prevail, but for a long period of time the domestication of the dog has been going on, and it was not a struggle for the survival of the fittest but rather a condition of environment and climate. Hence we find all kinds of variation, from the little lap-dog and the poodle to the St. Bernard and the short-haired greyhound and the long-haired Newfoundland. You can find almost any kind of a dog you want in color, size, shape of nose and tail, and other characteristics, and dog fanciers would get you up almost any style you wish. It is much easier to handle this thing with the annual plants than it is with perennial plants. I think the reason that in California they get so much quicker results than we do here is the fact that they have a wonderful climate, and in such a climate it gives plants a greater opportunity to differ, and the tendency of plants to be different from their birthmates asserts itself.

Mr. Probstfeld: The same varieties of trees that grow to an immense size in that country will take double the time to grow to that same size in this country.

Prof. Green: Another thing, anything that tends to disturb the equilibrium of the plant tends to make it different from its birthmate. That is what we want to do. In talking with Luther Burbank a few years ago, he said what he was looking for was an individual that was different from its birthmate. He didn't care whether it was better or even if it was worse—all he wanted was a starting point, something that showed a distinct tendency to be different. He also made the remark that perhaps at his place there was no need for any further hand-crossing, for the reason that he had crossed things so thoroughly then and had so many different types that pretty nearly everything on his place had broken away from the

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natural type. Yesterday morning when Mr. Wirth was speaking about those roses, the thought came to my mind in regard to the Bride and the Bridesmaid. This is not a new variation from the seed, not a seed variation, but it is a bud variation. This flower here is the old Catherine Mermet, and the Bridesmaid is not a seed variation but simply a bud variation. Now, we have seed variations, and we have bud variations in the tree or plant. We have come to look upon a tree as a community of individuals and not as an individual. Every bud is an individual, and hence the possibilities for a different type from the original.

Mr. Probstfeld: Does that hold good in potatoes?

Prof. Green: Oh yes, the Polaris is simply a bud variation of the Early Rose. It was reported to have been discovered in a field of Early Rose somewhere in Vermont and was considered to be a bud variation of the Early Rose.

Mr. Probstfeld: I have a sprout from the Beauty of Hebron that promises to be better than the Beauty of Hebron.

Judge Moyer: Does not really the climate have a great deal to do with it? Take the choke cherry for instance. In the east it is a small cherry and not good for anything, but in western Minnesota it is better than it is in the east, and at Winnipeg you find the choke cherry four times as large as it is with us, and it is good eating. I was out in Saskatchewan, and there I found it growing still larger. and if we could grow it in this section of the country to that size it would really be worthy of propagation.

Prof. Green: The form of the wild crab as we find it in Iowa and Illinois is a great deal better than we find it in Massachusetts and other eastern states.

Mr. S. D. Richardson: We have a bud variation in the apple, a sour apple from a sweet one.

Prof. Green: Some varieties are given to that. The Ben Davis is something like that, and I have seen branches that bore very distinct fruit. A number of years ago the United States Department of Agriculture tried to get on the track of varieties of the apples and pears that had come from bud variation, but they found only a few that were of commercial value.

SUCCESS WITH SPRAYS.—Nearly all of the essentials of success in spraying could be summed up in the word thoroughness. It is very important to know the best materials to use for the control of our insect and fungous troubles. In this day of numerous materials for the control of the same trouble and with all of them having good recommendations, it is rather hard to decide which is really the best without having tried them yourself. From unprejudiced tests I have in general found the following materials as best for the control of numerous fruit troubles: Lime, sulphur, copper sulphate and arsenate of lead. These materials can be made into the three great remedies, viz, lime-sulphur for sucking insects or scales; bordeaux for fungous troubles; and arsenate of lead for chewing insects. Excepting the arsenate of lead it is always most advisable to prepare your formulas at home. Therefore, mixing is an important essential.

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Horticulture and the Farm Home

MRS. WM. ROBERTSON, CROOKSTON.

The day is gone by when a farmer is known by the hayseed in his hair; neither does his wife any longer attract attention to herself by her poverty-stricken or unbecoming dress. In many farm homes of Minnesota there is as much true culture and refinement as can be found in any city home. The past ten years has witnessed many changes in this line, but the next ten will see still more progress. This is because more forces are at work solving the problem of better farm homes, and also because these forces are even now learning to get together in this work and organize more thoroughly with definite aims in view. Notice the Land Congress held last month in Chicago. The speakers representing Minnesota were of widely different occupations, the list comprising governor, commissioner of immigration, United States congressman, educator and land agent. Still when you read the speeches of all these men on that occasion, you are struck by the sameness of underlying thought and purpose and by the fact that Minnesota is bidding for only the desirable citizen. This is shown by the stress these men laid on the educational and social advantages of our state. It is perhaps easy to find places where a man can make money on the farm, but the really good citizen wants more than this. He wants to educate his family, and he wants enough neighborly sociability to make life worth living as he goes along. Here in Minnesota he finds these conditions, and notes that everything points to a still more rapid development along these lines.

Credit for this happy state of affairs is due to many different people and to many different organizations, but the great horticultural society of Minnesota deserves a place of honor on the list. The men who founded this society and fostered its growth builded perhaps better than they knew. They gave generously of their time, their money and their experience. The only reward they could hope for was the betterment of their fellowmen. But to these unselfish old pioneers of horticulture what greater reward could there be? Their works do live after them, and their names will be remembered by us and by our children's children.

There is something broadening and ennobling about the study of horticulture. Some are perhaps too ready to limit their view of the matter to securing fruit for the family to eat and to marketing the surplus. It is indeed a fine thing to keep the family in good health by means of a well-balanced ration, which of course must include

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fresh fruit. No family can be happy without being well-fed, neither can they do their best work unless they are happy and well-fed. But after the body is provided for, there is something still higher. If a Wealthy apple means to a boy simply something to eat, that boy needs some lessons in horticulture and also in other things. Show him a picture of Peter Gideon's fine old face, for of course you have one in your home. That much honor should be paid to a man who has done so much for the farm homes of Minnesota. Tell this boy how Mr. Gideon might have been a rich man if he had kept the Wealthy apple to himself when he originated it. Instead he chose to give it freely, satisfied to know he was doing good to others. Here is a lesson in unselfishness and generosity. Also tell him of the years of trial and discouragement before the Wealthy apple was produced, and draw from these years a lesson in perseverance. It will be easy right here to teach the boy a little history. He probably knows when America was discovered, but he may not know that the seed which was to produce the famous Wealthy apple was planted in 1861, at the same time the Civil War began. Tell him how long the war lasted and describe the condition of our nation and particularly of Minnesota when the war finally ended. Then bring him back to Mr. Gideon's apple-tree and ask him whether it had begun bearing when the war closed. Associating the war and the apple dates in this way will make it easy for him to remember both.

Of course you have a plat of your orchard. In the spring, while the trees are naked and the branches show clean-cut against the sky, take your boy into the orchard, give him the plat to consult and call his attention to the forms in which the different trees grow. The Whitney No. 20, with its straight trim branches, grows like a big whisk broom. The Hibernal is probably about the other extreme. Its shape is untidy and sprawling, its branches are full of right angles and awkward corners. He will readily see, also, that different trees have greatly different barks. After he has used the plat a few times to locate these different trees, take it away from him and require him to reproduce it himself from what he has learned. Here you give him two important lessons, one in quick, intelligent observation, the other in memorizing, which is an old-fashioned accomplishment rather neglected these days.

When the apple trees bloom, he will enjoy a lesson in botany. Show him the different parts of the blossom and explain their uses. Cut an apple in cross-sections, and ask him whether the number of petals in the blossom corresponds to the number of seed compartments in the fruit. Take up the study of the strawberry blossom and the

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staminate and pistillate varieties, so he will know why certain kinds should be planted beside certain others. When the strawberries are ripe, he should learn to distinguish all the different varieties, even when they are picked and put together in one dish. When the apples mature, show him the difference in shape, size, coloring and grain, and he will soon learn to pick each out correctly from a mixed lot. This is only continuing the observation lessons begun in the spring.

Sickness and sorrow will always be among us more or less, but whether our sick neighbor is poor or rich, flowers and fruit are always a suitable gift. The horticulturist has a plate of beautiful apples and plums in season, or a bunch of apple-blossoms when there is no fruit, or a glass of bright, delicious jelly when neither fruit nor flowers are obtainable. Send the boy with these gifts, and teach him the lesson of thoughtfulness for the suffering.

Every boy is delighted when he learns to graft. He can hardly wait for the day when he shall pick fruit from the branch he himself set in the tree, and he never gets over the wonder and mystery of seeing several kinds of apples on the same tree, fed by the same sap. He is continually experimenting, top-working this tree and that or trying new seedlings. In order to do this successfully he must hunt up these points in horticultural papers, in farmers' bulletins, in scientific works of all kinds. The first thing you know he has accumulated a little library in this line, and then you realize your son has learned the lesson of studiousness.

But perhaps the lesson most useful in forming the boy's character is one not yet mentioned. When you visit a strange community and are getting pointers on the place, you often hear some such remark as this, "You want to be sure to visit John Smith's farm. He has the finest orchard anywhere around, and you mustn't miss going there." If there is any horticulture in your soul, of course you *don't* miss going there. When you shake hands with John Smith, you look into a kindly, wide-awake face and immediately recognize a kindred spirit. You two walk away to the orchard, and without waiting for directions the boys put your team in the barn and give it proper care. As you pass the house, Mrs. Smith comes to the porch to greet you, and you wish you might find her like in more farm homes. Your first look tells you that her horizon is not bounded on the north by washing and ironing, on the east by scrubbing, on the south by cooking and on the west by discontent. Her outlook on life is as broad as that of any of her city sisters. She reads, she thinks, she goes, she entertains, she is interesting and alive and progressive. She is decidedly not one of the lonely candidates for the insane asylum we read so much about. She

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tells John to be sure to bring you in to dinner when it is time, and you walk on thinking Mr. Smith is a lucky man to have such a wife. The children keep beside you as you pass from tree to tree. They run to bring you samples of this and that, and introduce you to each tree as to an old and familiar friend. They lead you proudly to the latest seedling, and ask your advice as to a suitable name. They show you samples of their own grafting. They prove in every look and act that they and their father and mother are all interested in the same things, all working together for the same purpose, and therefore the home ties are strong. When you go in to dinner, you are not worried by the sight of an anxious and overheated hostess. Mrs. Smith has no need to fuss with fancy cooking when she has an unexpected guest. She simply cuts another slice of sweet home-cured ham, breaks another fresh egg, peels an extra potato or two, and trusts to her orchard products for the remainder of her meal. There are rows of transparent jellies, spicy jams and rich marmalades in the cellar. There are jars of apple pickles and plum butter and spiced currants and gooseberries, and she has only to choose from among them. Dessert is an easy matter. She removes the cores from a dozen large red apples, puts in each hollow a piece of butter the size of a filbert, fills the hole with sugar, dusts the surface with nutmeg, and bakes in rather a hot oven. These apples served with cream from the farm dairy are fit for a king.

The father and mother in this home are building for the future when they welcome the stranger within their gates. Their children will never know what it means to be bashful and awkward. Trained all their lives to care for the comfort and pleasure of guests, they do it as naturally as they perform any other duty, without a thought of self to disturb their composure. Having met and dealt with the best class of people in their own home, they will never need to be sent away to school for lessons in social culture. They are absorbing the truest culture in the surest way right at home. At the same time they are practicing hospitality in its highest form when they share gladly with a guest the best they have.

When we sum up the lessons we have from this Wealthy apple we find quite an array: generosity, perseverance, observation, memory, botany, history, thoughtfulness for others, studiousness, hospitality and social culture. What would a home be without these things? Just imagine such a condition of affairs, and we can see why so many boys are ready to leave the farm. Bring into their lives this horticulture and all that rightfully goes with it, and the farm gets a grip on them that nothing ever loosens. Listen to one of these fruit-farm boys, even

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after a four years' course in a city high school. His graduating essay dealt with "The Farm Home," and here is an extract from it giving his view of the matter:—

"All healthy boys and girls like fruit, especially when they can pick all they want from the berry bushes and apple trees, or roll in the clean straw between rows of strawberry plants and eat until they can eat no more. Raspberries, blackberries, currants, gooseberries and grapes may all be grown, but above all apples and strawberries are the fruits most appreciated by one who has enjoyed them where they were growing in abundance. Let a country boy who has been used to plenty of these luxuries go to the city, where fruit must be bought and then only miserable specimens obtained, and this boy cannot get back quickly enough to the old farm home."

If the Minnesota State Horticultural Society would know the secret of its success in the past, let it recall the determined and persistent policy of its faithful secretary, that the society is an institution for the farm home and the farmer as well as for the nurseryman. This broad view must in time become universal throughout the states, and with so many forces working toward one end the future prospects of the farm home are certainly bright.

Orchard Work in the Bayfield Peninsula

HARVEY NOURSE, BAYFIELD, WIS., DELEGATE, WIS. STATE HORT. SOCIETY.

It was many years ago, probably more than 100 years ago, that orchard work had its beginning at Bayfield or vicinity. The first work in this direction was the planting of a cherry orchard by the Jesuit Fathers on Madeline Island, near the town of LaPointe, and while this orchard had practically no care it still exists and bears bountiful crops of cherries nearly every year. The planting of the apple came later and dates back to possibly fifty years ago when the first trees were set at Bayfield. Some of these trees are still living and bearing annually good crops. These trees also had little, if any, care, and so it has been until recently with all of the orchards planted in the Bayfield Peninsula and Apostle Islands. Right here I wish to say that the Apostle Islands should always be included with the Bayfield Peninsula when speaking of our fruit section.

One of the oldest apple orchards that we have is located on Michigan Island, having been planted many years ago by a nurseryman from Minnesota (R. H. Pendergast, now living at Duluth. Sec'y.) who at that time was a lighthouse keeper on the island and, although

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Berry picking at Harvey Nourse's, Bayfield, Wis.

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left to take care of itself, this little orchard struggled along fighting its way into the forest, seeming determined to survive under the most trying conditions. It was on this island and near this orchard that some six or seven years ago a gentleman interested in fruit growing was stopping at a lumber camp when he noticed the cook of the camp coming out of the woods with a dishpanful of apples. He was naturally asked by the astonished gentleman where he got them, and his reply was, "the woods are full of them." He directed the gentleman to where they might be found, and he has often remarked that from the moment he saw those apple trees loaded with fruit struggling for existence among brambles, brush and forest, he knew we had a fruit country.

Now then, the question naturally arises, if these orchards, planted in an early day, could grow and thrive under such neglect, what might have been accomplished with proper cultivation and care? However, it required the enthusiasm of fruit growers and horticulturists from elsewhere to start us planting orchards on a large scale in the Bayfield Peninsula. But when such men as our Dean Henry, Secretary of Agriculture Wilson, C. G. Patten, George H. Whiting, Prof. Sandsten, W. H. Hanchett and many others testified convincingly of the possibilities of the Peninsula, the planting of orchards began in earnest. This was three years ago, and about seventy-five acres were set to trees at that time. The planting has increased each year since until now the largest orchard in the state is located at Bayfield. This orchard comprises sixty acres and will have twenty acres more added to it next season. The ground for this twenty acres is already prepared and the trees on the ground; some of them heeled in and a number set this fall, for we believe that fall setting of trees in our section, where the ground rarely freezes, will be successful; in fact, it can hardly be called an experiment, for it has already been quite thoroughly tested.

One hundred twenty-five acres will have been set to cherries by next spring. This fruit excels in the Bayfield Peninsula. The trees are loading up with fruit each year, and there is no doubt but what this section is destined to become one of the greatest cherry growing districts in the country. The English Morello seems to have the preference with us, although the Early Richmond and Montmorency make a much better tree growth and also lengthen the season. While the English Morello makes but a small tree, they may be planted very closely together, about 300 to an acre, and in four years' time we believe will yield at least one sixteen-quart crate per tree of large, firm, dark red cherries, which are harvested without the use of ladders required for the other varieties.

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The men that have taken hold of the fruit proposition at Bayfield are going at it right and spare no pains to have the land properly prepared for planting. At first many of us thought that trees planted between the stumps and without cultivation would do as well as though they were cultivated. Some thought to carry out the mulch system, which has been so successful in Ohio, but only a little of this plan proved to most of us that trees in our section needed cultivation. It was explained to me by one of our noted horticulturists why cultiva-

Wealthy trees at Bayfield, set in spring of 1885

tion with us would be necessary and his statement was this: While the mulch system appeared to be successful in Ohio and some other sections, the conditions there are just the opposite from what we have. In Ohio, for instance, the climate during the summer is much warmer than with us and mulching the trees would have a tendency to keep the ground cool, which is very beneficial for successful apple production. In our section the soil is cool enough without the mulch, in fact, needs just the reverse treatment and should be warmed in order to produce

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the growth and size of fruit necessary, and there is no way to accomplish this like thorough cultivation, and it is remarkable what growth may be obtained if cultivation is given.

Little, if any, fertilizer is needed to obtain this growth, as the soil apparently is rich enough and only needs aeration. Most of the orchards are planted in virgin soil, where the timber and brush must first be removed and stumps pulled before the work of planting can be done. This to some appears quite a problem, but dynamite, a good stump puller and breaking plow, a heavy cutaway harrow or even a good spring tooth harrow, will transform this wild looking rough land and make it appear like a garden, and if attention has been given to proper elevation, drainage, etc., trees planted on this well prepared soil begin growing at once and come into bearing very quickly. Think of a one year English Morello cherry tree, thirteen months from planting, yielding 76 cherries, and a Patten Greening apple tree planted the spring of 1906 yielding this season 106 apples that averaged half a pound each. Two small Wealthy apple trees in my garden gave me four barrels of beautiful apples with not a wormy apple or one affected with scab to be found in the lot, although the trees have never been sprayed—and so I might mention many instances of remarkable yield, but time will not permit.

A spray of cherries at Bayfield.

It will be found that severe pruning must be resorted to in our section, for an apple like the Wealthy will invariably overload, and as we have not had a spring frost in thirty years' time sufficient to injure the fruit bud or blossoms it is up to us to either prune severely or thin the fruit. If this is not attended to the trees will break down under too heavy a load and thus injure the orchard materially.

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Very little spraying has been done, although it is the belief of our fruit growers that we should spray as a preventative, although there seems to be little need of this at present.

The following varieties of apples bore fruit with us this season: Yellow Transparent, Tetofsky, Duchess, Dudley, Red Astrachan, Wealthy, Peter, Okabena, Patten Greening, Hibernal, Alexander, Wolf River, Longfield, Twenty Ounce, Haas, Rambo, Scott's Winter, Bis-

Three-year old Duchess in fruit at Bayfield.

mark, Northwestern Greening, Gideon, Ben Davis, New York Russet, Fameuse, Andreas Seedling and Knight's Seedling. Crab apples: Transcendent, Whitney No. 20, Martha, Virginia, Hyslop, Yellow. Other varieties have been planted but have not fruited yet. However, for a commercial orchard, we do not advise planting any great variety but would confine our selection to five or six varieties, such as Yellow Transparent, Duchess, Wealthy, Patten Greening, Wolf River, and Dudley, with Transcendent and Hyslop for crabs.

In closing I should like to say for the benefit of some people that live in St. Paul—now remember, I said St. Paul, not Minneapolis—that the Bayfield Peninsula is not all of Bayfield County; it is not

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half of Bayfield County but only a small portion of Bayfield County. It is also located in the state of Wisconsin, on the south shore of Lake Superior—not at the north end of the Yakima Valley.

Mr. Probstfeld: He said he recommended fall planting,—I presume he means early fall planting.

The President: He said the ground does not freeze in winter.

Mr. Nourse: We planted up to three weeks ago.

Mr. Probstfeld: This fall has been an exception. The ground is not frozen even now.

Mr. Nourse: Any time will do for planting so there is no danger of freezing the roots.

Mr. Probstfeld: I do not believe in too late planting, but I would do it as soon as the leaves are off the trees.

Mr. Hunter: I would like to ask whether the Montmorency cherry does well up in that section?

Mr. Nourse: Yes, it does.

The President: It seems to me our friends at Duluth ought to be encouraged by this report. I said a good many years ago there was lots of good land around Duluth that could be used for raising apples. It is as favorable as the section further south. The lake is the great factor that makes the Bayfield Peninsula what it is.

Mr. Nourse: I do not want to say anything against Duluth, but we are more favorably situated. We are out on the peninsula where the lake wind blows in from one side to the other.

Mr. Brackett: I have seen beautiful Wealthy apples raised near Duluth, as fine apples as I have seen anywhere.

Mr. Hostetter: Duluth was the first to start in this work.

WHERE MIXING APPLES PAID.—"I have a small orchard of three acres containing about ten varieties. For many years these varieties have produced very much more regular and bountiful crops than the same varieties in my commercial orchards, where they are planted in solid blocks. In fact, I have noticed that when I get bloom I almost always get fruit. It seldom freezes hard enough or the weather is seldom bad enough at blooming time to prevent my getting apples on these trees and on almost all varieties. I have decided that apples which are cross-pollenized have a great deal more vitality than those that are not. They will stand quite a hard freeze and unfavorable weather generally without being killed. Then, too, this fruit, other things being equal, will grow larger and more perfect in shape. I have also thought they are more resistant to attacks of scab."

"I have 40 acres of straight Ben Davis. One portion corners with a Jonathan orchard; another with a mixed orchard of Grimes, Lowell, Duchess, etc. These two corners are always very much fuller than the remainder of the orchard. Sometimes in the off years they are full, while the other portions of the block are almost bare of apples. In 1907 some trees in the corners yielded 20 bushels, while the rest of the orchard did not average half a bushel to the tree. My 40-acre orchard planted to eight rows Ben Davis and four rows York Imperial has always shown marked benefits from mixing varieties."

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The Apple and Its Parts

A. R. KOHLER, ASSISTANT HORTICULTURIST, UNIVERSITY FARM, ST. ANTHONY PARK.

The apple is the most extensively grown tree fruit of this country. There are perhaps one thousand varieties under cultivation in various parts of the United States. Much confusion in the identity of varieties has resulted during the evolution and introduction of this large number. Part of this has been due to confusion in the use of names for varieties and part to inadequate descriptions. The former can be prevented by following carefully the "Code of Nomenclature" now recommended by the American Pomological Society. The latter can be largely avoided by care in making thorough and adequate descriptions of new varieties before they are permitted to leave the originator's hands, so that in case some subsequent holder of the stock gets it confused with some other variety there will be available some thorough and reliable description by means of which the confusion may be unravelled.

Various means and accessories may be brought into play in making such a record. One, and perhaps the most important, is some form of a description blank in which the features and the characteristics of the various parts may be noted. Such a blank should provide for a description of the tree and its parts as well as of the fruit. The description should always be supplemented with longitudinal and cross-section prints of the variety, which should be made directly on the description blank.

The form of blank used by the classes in systematic pomology at University Farm is illustrated below. This form of blank is not perfect, in that more space should be given to the description of the tree and its parts.

APPLE DESCRIPTION BLANK.

Variety ..... Described by.....
Species ..... Date .....
Group ..... Where grown .....
Synonyms ..... Condition .....

FRUIT:

Size .....
Form .....
Color .....
Surface .....
Dots .....
Cavity .....

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Stem .....
Basin .....
Calyx ..... Lobes .....
Calyx tube ..... Stamens .....
Core .....
Cells .....
Carpels .....
Seeds .....
Skin .....
Flesh: Color .....
Texture .....
Flavor .....
Aroma .....
Quality .....
Season .....
Use .....

TREE:

Hardiness .....
Vigor ..... Habit .....
Twigs .....
Age of bearing..... Productiveness .....

HISTORICAL:

Time of origin..... Place .....
Manner ..... By .....
Introduction by ..... Time .....
Present standing .....
Remarks: Sketch:

In order to explain the use of this description blank, its parts will be discussed in the order in which they appear, and it is in this connection that the study of the parts of the apple is made.

Variety. Here should be written the name of the variety, which should comply with the Code of Nomenclature of the American Pomological Society. If a permanent name has not yet been given, the temporary name or number may be written instead.

Species. The species will be Pyrus malus if a common apple, Pyrus baccata if a Siberian crab, and may be called Pyrus prunifolia if a hybrid between these two.

Group. If the variety being described belongs in any group of closely similar varieties the name of the group may be written here.

Synonyms. Here may be written any other names under which the variety is known, including the seedling name or number it had before a definite name was given.

Where grown. The county and state in which the specimens being described were grown, soil and kind of location may be stated here.

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Condition refers to degree of ripeness and state of preservation.

Size may be *large, medium* or *small,* with modifying adjectives, *uniform,* if quite similar in size, or *variable.* A fair sized Northwestern Greening may be described as large, a medium sized Wealthy as medium, and a medium sized Longfield as small. Size for crabs is considered on a separate basis from that for ordinary apples.

Form may be *oblong, round, conical, oblate* (See Fig. 1), *ovate,* if somewhat egg-shaped: or a combination of some of these forms, as roundish oblate, roundish conic, oblong conic, etc. To determine form

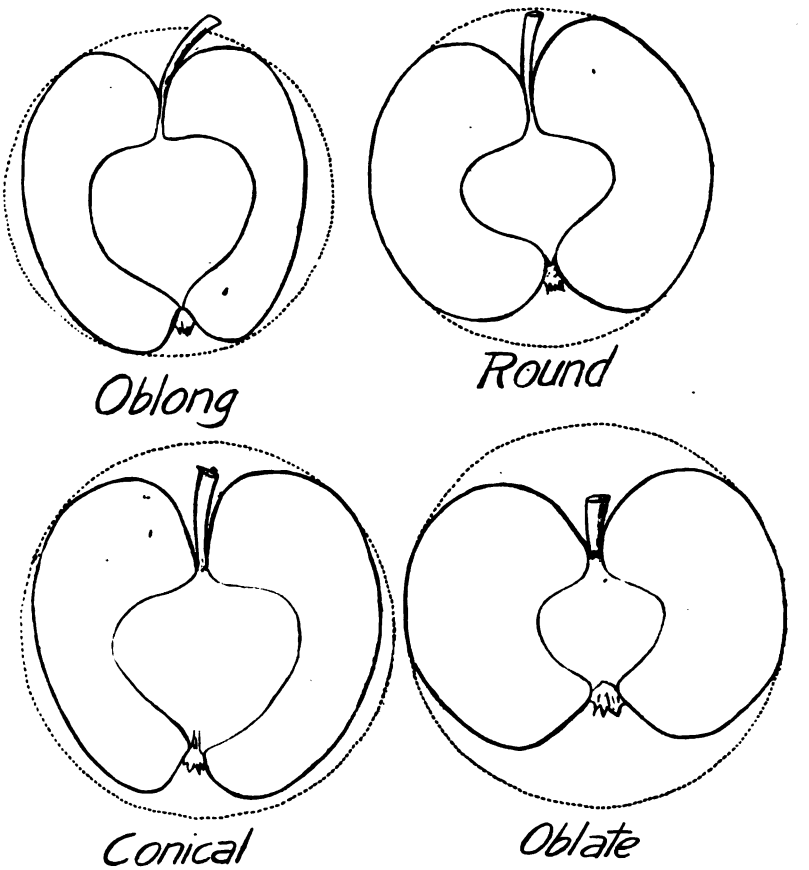

FIG. 1. Showing forms of apples.

properly the apple must be held level with the eye in an upright position. Varying degrees of inclination toward some other form should be carefully and accurately noted. *Truncate* is a term used to indicate an abruptly flattened or cut-off appearance at the ends, as in

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Grimes' Golden. The form is *oblique* when the axis from stem to calyx has a slanting position. If the sides are equal the apple is called *symmetrical;* if unequal in properly developed specimens it is termed *sides unequal.* From an end view of the apple it may be determined whether it is *regular,* meaning circular in outline; *elliptical,* if the sides are compressed; or *irregular,* if it is *angular, ribbed* or *scalloped.* If the apples are similar in form they are *uniform;* if not, they are *variable.*

Color. Ground color is often mentioned first. It may be *yellow,* or *green,* or some combination or shade of one of these colors. *Surface color* consists of the color markings over the ground color. This color may be some shade of *red;* crimson, if a deep red color tinged with blue; or carmine, if a rich red color with a shade of purple. It may be a *blush,* if it consists of an unbroken color on one cheek of the apple; *stripes,* if of broad lines of color; *streaks,* if of narrow lines of color; *splashed,* if of short or broken stripes; *mottled,* if irregularly colored and the underlying color shows through; *washed, shaded* or *sprayed,* if the coloring is fairly even or changes gradually, but not solid enough to rank as blushed. The blush may be thin or heavy, and bronze or some shade of red in color. Stripes or other form of color may be faint or distinct. Often there are faint or distinct stripes or other forms of color of darker shade overlying some other shade of red. Often the surface color is so well developed as to be almost *solid,* with the stripes or other form of color very indistinct. If there is no surface color or only a blush the apple may be termed *self colored.* Occasionally a variety has a sort of line or suture extending from the stem around the apple. The *prevailing effect* of the color should always be stated.

Color is difficult to describe intelligibly, and the careful selection of distinctive words and phrases adds much to the value of the description.

The *surface* may be *smooth;* or *roughened,* as by minute netted russet veins or russet dots; or the entire surface may be more or less covered with a heavy coat of *russet.* If the whole surface is naturally covered with russet, it may be noted under color. Russet which has resulted from spray injury should not be confused with natural russet. The surface may be *bright* or *dull, waxy* or *oily,* or *waxen,* which is bright and waxy in appearance without the real waxiness to the touch. Sometimes it is covered by a *grayish bloom,* or it may have a sort of dull, faint grayish overcast.

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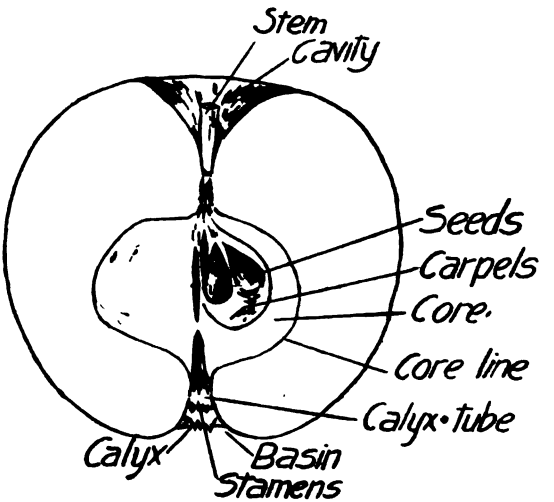
The *dots* may be *obscure* or *distinct, numerous* or *few; large, medium* or *small; white, gray, russet* or some other color; *submerged,* if they appear to lie under the skin; *depressed,* if in a depression; *rough,* if extending above the surface of the skin; or *areolar,* if surrounded by a halo, or ring of lighter color; and of various shapes, as *round, elongated* or *stellar,* if star-shaped. Often they are more numerous at the apex or have distinctive characteristics, as *elongated* at the base (stem end) of the apple, and they may be different on the colored surface of the apple from what they are on the ground color.



Longitudinal section of an apple showing its parts.

FIG. 2. Showing parts of an apple.

Cavity (See Fig. 2, showing the parts of an apple). The cavity may be *large, medium* or *small; obtuse,* if the sides make an angle larger than a right angle; *acute,* if the sides make an angle less than a right angle; or *acuminate,* if it tapers down along the stem: *shallow, medium* or *deep; narrow, medium* or *wide; flaring,* if especially spreading at the top; *symmetrical,* if the same width in all directions; *compressed,* if narrower one way than the other; or *lipped,* if the flesh rises up to meet the stem; *smooth, ribbed* or *ridged*: characteristically *green,* as in some varieties; or *russetted,* as in others, the russet often being characteristic and sometimes extending from the cavity in radiating lines.

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The *stem* may be *short,* if it does not extend above the cavity; *medium,* if it does not extend beyond a completed curve from the sides of the apple over the cavity; and *long,* if beyond the curve; *thick, medium* or *slender; pubescent,* if covered with a woolly-like coat; and *clubbed,* if enlarged on one side at the end.

The *basin* may be *shallow, medium* or *deep; narrow, medium* or *wide; obtuse,* if the sides are very sloping; or *abrupt,* if the sides are steep and not flaring at the top; *wide, medium* or *narrow* in the bottom as distinguished from general width; and *smooth, wavy, ridged,* if there are ridges above the general surface of the flesh in the basin; *furrowed,* if there are grooves below the flesh; or *wrinkled.*

The *calyx* may be *open, partly open* or *closed, large, medium* or *small.*

The *lobes* are the five leafy parts which together constitute the calyx. They may be *wide, medium* or *narrow; long, medium* or *short; tapering* or *blunt; convergent,* if sloping towards each other; *divergent,* if sloping away from each other from the base of the lobes up; *connivent,* if the convergent lobes slope together to the tip; *reflexed,* if the convergent lobes turn away from each other at the tip; and *separated* or *contiguous* at the base.

The *calyx tube* may be *long* or *short, wide* or *narrow; conical,* if cone-shaped; *funnel-shaped,* in which case the stem or *cylinder* of the funnel may be *long* or *short, slender* or *broad; urn-shaped,* if U-shaped. To get the correct shape, the calyx tube must be split squarely in the middle, else a funnel-shaped tube may be seen as only a conical one.

The *stamens* may be *marginal* in position, if near the outer edge of the calyx tube; *medium,* if half way down; and *basal,* if near the bottom. In funnel-shaped calyx tubes, the stem portion of the tube need not be considered in determining the position of the stamens. The remains of the pistils in the bottom of the tube must not be confused with the stamens.

The *core* may be large, medium or small; *axile* (See Fig. 3), if the cells come together along the axis of the apple; or *abaxile,* if there is a hollow cylinder along the axis; *medium* or *central,* if in the middle of the apple as seen in longitudinal section; *basal,* if near the base (stem end) of the apple; *sessile,* if so near the stem as to be directly attached to it; or *distal* if below the middle of the apple. The core lines may be *clasping* if they take hold of or "clasp" the calyx tube; or *meeting,* if they come together above the calyx tube. Sometimes the shape of the core may also be given.

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The *cells* may be *open* or *closed; large* or *small; thin* or *slender* (as seen in cross section), if the walls are close together; or *roomy,* if the walls are far apart; *unsymmetrical,* if the two halves of the cells are not similar.

The *carpels* are the woody walls of the cells. Their shape is given. In determining shape, the two carpels of a cell as laid open with their axile margins together are considered. They are often some

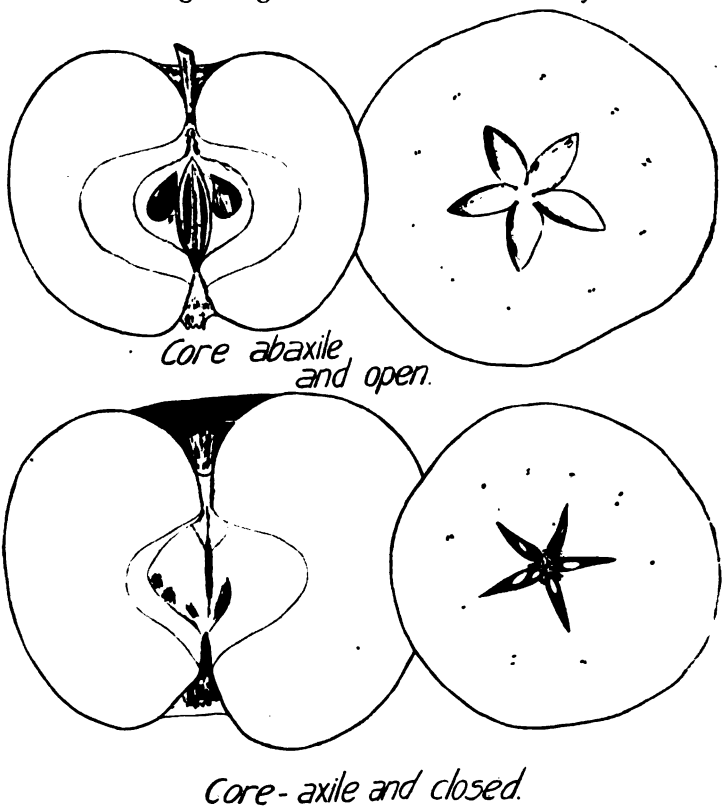

FIG. 3. The dots in the cross sections on the right are the cut off ends of the core lines seen in the longitudinal sections.

broadened form of the apple. Sometimes they are *cordate,* meaning heart-shaped; or broadly cordate, etc. They may be *emarginate,* if indented along the outer edge near the tip; *mucronate* if they have a long and slender point; and *tufted,* if the inner surface has a whitish fuzzy outgrowth.

The seeds may be *many* or *few; large* or *small; light* or *dark,* or some other shade of brown; *plump* or *slender; obtuse,* if bluntly pointed; *acuminate,* if long and narrowly pointed; or *acute,* if not so sharply pointed but not blunt, and *tufted.*

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The *skin* may be *thick* or *thin; tough* or *tender,* or some degree of these terms.

The *flesh* may be *white, greenish* or *yellowish* in color, or any combination of these colors, as greenish yellow, etc.; or it may be streaked with red. In *texture* it may be *firm, hard, tender, tough; crisp,* if moderately firm but breaking readily; or *breaking; mealy, dry* or *juicy; fine grained* or *coarse grained.* In *flavor* it may be *sweet, sour, very sour; sub-acid,* if moderately sour; *mildly sub-acid, sprightly sub-acid* or some other degree of acidity; pleasant, aromatic; flat, if lacking flavor; or astringent, if very sour. Various appropriate modifiers may very advantageously be used to denote the exact flavor. Flavor varies considerably, however, with the degree of ripeness of the specimens and where they have been grown.

Aroma is the well known apple odor of certain varieties. It is described in the degree to which it is present, as none, little, *aromatic, very aromatic,* etc.

Quality is largely considered from the dessert standpoint, unless otherwise stated. An apple may have comparatively medium eating quality and have very good cooking quality. It is the sum total of the characteristics of the texture and flavor of the flesh, along with which the character of the skin bears a secondary share of influence. Quality is generally spoken of as *poor* or *inferior, fair, good, very good,* and *excellent* or *best.* It will be observed that a variety which may be called "good" is really a third rate or medium apple as far as quality goes.

Use is the one or more purposes or uses to which the variety may be adapted. If good for general market, its use may be termed as *market;* if it sells well but does not stand handling and shipping well it may be termed *local market; dessert* signifies that it is desirable for table use as a fresh fruit; and *cooking, culinary* or *kitchen* signifies that it is good for general or special kitchen use.

The part of the description blank referring to the tree would need to be very much elaborated upon if the description of a variety were to be made complete.

The *hardiness* may be mentioned as *first* or *second degree of hardiness,* and if not generally hardy, special reference should be made to the sections in which the variety is hardy. Susceptibility to blight, which is associated with hardiness to a considerable extent, should also be mentioned here.

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Tomatoes in the Home Garden

FRANK W. POWERS, MINNEAPOLIS.

Almost everyone likes a fresh, ripe tomato just picked from the garden, and many who now do not raise tomatoes would do so if they knew how little time and trouble it takes, and how small a piece of land will furnish a family with all that they can use.

To raise tomatoes, the first thing to do is to secure the right kind of seed—that will grow. There are many kinds of good tomatoes, but I prefer the Ponderosa, as I think it yields more fruit to each plant—the tomatoes grow so large and meaty, having very few seeds and a fine flavor. There are those that ripen earlier than the Ponderosa, among which I would choose the Early Anna.

Having secured good seeds, if you have no greenhouse or hotbed fill a box five or six inches deep with rich, mellow dirt and sow the seeds in it, covering them about half an inch deep. This should be done about the middle of March. Place the box in a window where it will get the warmth of the sun. Keep the earth damp but not too wet, and soon you will have the pleasure of seeing the plants grow. Thin out the plants so they will not be too thick and after they get some size transplant them, placing them farther apart. This will cause the tops to grow more stocky and the roots thicker and stronger.

About the middle of April transplant them again, this time putting each plant into a strawberry box, and place these in a box with enough dirt in to fill up the spaces under the boxes. You will then have strong, healthy plants to put into your garden as soon as the danger of frosts is over.

When setting them into the ground, break away the boxes without disturbing the roots and the plants will keep on growing without a setback. When setting out my plants I choose a place where the soil is very rich, is sheltered as much as possible from the winds, and where they will have lots of sunshine, for you cannot raise good tomatoes in the shade. I place my plants in rows four feet apart and three feet apart in the row.

When the plants reach a foot in height I set an eight foot stake by each plant and tie the plant to the stake, allowing only two of the branches, which have the earliest blossoms on, to grow. After this I tie the plants up about once a week, cutting off all sprouts or suckers and sending all the strength of the vine into the fruit buds on the two branches, causing these branches to grow very rapidly—reaching a height of from six to eight feet by the last of August and filled with great clusters of tomatoes all the way up. I get about half a bushel of fruit from each plant.

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If one lives near a greenhouse kept by a man who can sell you the kind of plants you order, it will be easier to buy plants, but be sure he gives you good plants and the right kind.

Where it is hard to get stakes for each plant it may do nearly as well to put up a few posts and stretch wires on them over the plants and tie to them. Do not let the plants lie on the ground, as the fruit is apt to rot and does not grow in as good shape.

When the plants are trained as I have described the fruit will ripen early near the ground and keep ripening farther up, so that one has to reach up to pick the late fruit.

Before the first hard frost I pick the large green, smooth tomatoes, wrapping each one in paper, and pack away in a cool, dry place. These keep ripening so that we have fresh tomatoes on the table up to the first of December.

Mr. E. F. Pabody: This is a subject in which I am very much interested. I have raised tomatoes all my life, but in the last three years I have made some discoveries regarding the possibilities of the tomato I never knew before. I have pursued somewhat the same course as pursued by Mr. Powers. The tomato is coming to the front, and until the last few years I had no idea of the remarkable development of which the tomato is capable. We have them on our table once every day and sometimes three times every day. When I began to raise tomatoes, I did as most people do, put little stakes around the plants and put a couple of barrel hoops around the stakes. A few years ago I began using long stakes. I found, with the length of stakes I used, the tomato vines soon came to the top. I increased the length of the stake, and still they reached the top, and this year I had vines ten feet high, with a hundred tomatoes on each vine.

A market gardener who lives near me told me to give the tomatoes the poorest soil I had. He said if I did not the tomatoes would all run to vine, and I would get no fruit. I disproved that theory to my complete satisfaction. If you have never examined the root of a tomato you will be surprised at the size of it. This (indicating) is the root of a tomato that grew ten feet high. If it is near the surface it has not enough protection to form a great deal of fruit. In planting my tomatoes I put them below the surface and gradually hilled them up, so that all the time I am cultivating I keep turning the dirt up around the tomato. The stalk sends out lateral roots which add greatly to the strength of the growing plant, and when the fruit begins to form the roots are almost a foot below the surface, where they are well protected from danger from drouth and where they get plenty of nourishment. In tieing them up to the stake that way they are kept off the ground and they get the sunlight and air, and they are of a much finer quality than when they grow near the ground and where they are shaded and liable to decay. I never knew what a good tomato was until I began raising them in this way. This year I expect to tie my tomatoes to posts 2x2, 15 feet high. If you

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have never tried this method, I wish you would. My garden is two hundred feet from Lake Minnetonka, and in August we usually have some sort of weeds from the lake blown up on the shore, and I mulch my tomato plants with them. One can have three or four vines growing ten to twelve feet high and they will furnish all the tomatoes that an ordinary family can use.

Mr. Hunter: What variety do you use?

Mr. Pabody: The Freedom. Henderson recommends the Ponderosa, but I do not like them so large.

Rev. C. S. Harrison: We raise the Stone's Bush tomatoes, which is one of the earliest and one of the finest tomatoes that can be grown. They never have to be staked, which is a great advantage.

Mr. Elliot: I expect to eat tomatoes on Christmas that we picked in October. I have been practicing the plan of staking. You must understand this paper is written from an amateur's standpoint and not from the standpoint of a commercial grower. Our commercial gardeners, if they were told to adopt a method of that kind, would simply laugh at you; they would not recommend anything of that kind. They do not take time to trim and prune and tie up their tomato plants; they have other things to do, and they allow them to sprawl on the ground; they can make more profit on them. But if anybody wants to grow tomatoes in a small way, Mr. Power's method is just the thing.

Mr. Dewain Cook: I have raised tomatoes for the last fifteen years, but from a commercial standpoint, and I would like to tell how I do it. I start in with the Prize and the Earliana. I sow the seed with a garden drill on heavily manured land—they will stand any quantity of manure. Later I thin them out so they will stand four feet apart. I have marketed from two to seven hundred bushels a year for the last ten years, and I want to say the June Pink is the best of them all.

The President: What is the type of the vine?

Mr. Cook: It is of the type of the Earliana; they will stand any quantity of manure, and I can grow them cheaper than potatoes.

Mr. Busse: At what time are your tomatoes ready to eat and sell?

Mr. Powers: My first tomatoes, I think, come about the middle of July. They come much earlier where they are staked up in the way described, and cutting off the branches throws all the strength in the fruit; that makes them ripen much earlier. My neighbor had some started in the greenhouse, and he was going to have very early tomatoes. When I set mine out, they were 'way behind his, but I had tomatoes before he had.

Mr. Hunt: Do you use any special preparation in the soil before starting the seed in the house.

Mr. Powers: I sift the dirt and put in a little well rotted manure so as to have a rich soil.

Mr. Hunt: I tried that once and experienced some difficulty in telling the weeds from the tomatoes. If the seeds are started in boxes, I find by baking the soil before planting the seeds we get nothing but tomatoes, and are not troubled with weeds coming up.

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Pollination of Orchard Fruits

PROF. LE ROY CADY, ST. ANTHONY PARK.

More than 100 years ago (about 1793), the German botanist, Sprengel, published a book in which he showed as a result of his observations the part insects play in the pollination of flowers. This work, many statements of which have been disputed, proved a stimulus for further work and observation in pollination of fruits. Sprengel himself probably did not understand how important cross-pollination is in nature.

Later, Andrew Knight, in England, carried on experiments in cross- and self-fertilization of the pea, which showed that it was probably intended in nature that plants should be cross-fertilized.

Darwin was the first to establish clearly the true value of crossing and show the interesting modifications of plants to aid in cross-pollination. In Darwin's "Origin of Species," cross-fertilization is especially emphasized. But it was not until some time later that much attention was paid to his theories.

M. B. Waite, of the Department of Agriculture, Washington, conducted some very valuable work with apples and pears about twelve years ago. Since that time, many experiment stations and a few individuals have made systematic studies of this and many other plant-breeding problems.

Many plants are sterile as far as their own pollen is concerned but will readily respond to pollen from other plants. Some fifty plants are known to be thus self-sterile, but they will bear fruit if pollenized with pollen from other plants. C. I. Lewis, of the Oregon Experiment Station, Corvallis, Oregon, has found that out of eighty-seven varieties of apples worked with, fifty-nine varieties were self-sterile, fifteen self-fertile, and thirteen varieties partially self-fertile.

Many varieties naturally tend to be sterile when limited to their own pollen, and a knowledge of these is important in pollination work. A sterile variety is one that will not fertilize its ovule with its own pollen; the pollen of a fertile variety will do this. Investigators have found that climatic conditions affect the sterility and fertility of varieties, so that tests must be made in different climates.

The method employed to test this is to enclose the blossoms in Manilla bags before they open, thus preventing any outside pollen from entering the flowers; and if the blossoms fail to set fruit after the pollen has been distributed on the stigmas, the flowers are said to be self-sterile.

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Among self-sterile varieties of apples, according to Lewis, are Early Strawberry, Gravenstein, Haas, Jonathan, McMahon White, Pewaukee, Rome Beauty, Salome, Tolman Sweet, Transcendent crab, Wealthy and York Imperial.

Self-fertile: Baldwin, Grimes' Golden, Duchess, Scott's Winter, Shiawasse and Yellow Newtown.

Partly self-fertile: Ben Davis, Whitney and Yellow Transparent.

It has been found that certain varieties make better pollenizers of varieties than others. For example, better results were obtained by crossing Spitzenburg with either Jonathan or Baldwin than with Newtown, and very much better than when self-pollenized. In determining the pollenizers for any variety, we must choose those that blossom at the same time as the one to be pollenized, and they should bear a large quantity of pollen, although this is not essential.

In planting an orchard, it is well to set alternately about two rows of a variety that is weak in pollen, and then two rows of one strong in pollen, etc. They must be close enough so that insects will visit each easily. Wind has been found to be a poor conductor of orchard pollen.

The floral envelopes of flowers tend to attract bees and insects, but they quite readily visit flowers not having conspicuous floral envelopes or where the envelopes are gone.

Climatic conditions have considerable influence on the blooming periods of fruits. In cold, frosty localities, varieties should be selected in reference to their blooming periods, and success will more often result.

The length of time that pollen will keep varies. It may safely be kept two or three weeks, and even longer if not allowed to ferment.

In the work of cross-pollenizing at Corvallis, it was shown that immediate effects of pollen on color of fruit were seen. Also the crossed apples were heavier, and the seed was also heavier. Many of the self-fertile varieties when self-pollinated were found to be seedless or had small seeds. When the self-fertile varieties were cross-pollenized, an improvement in size was noted.

A complete flower consists of calyx, corolla, stamens and pistils. The calyx and corolla are for protection and the attraction of insects, while the stamens and pistils are the essential organs. The stamens are the pollen bearing parts, and the pistils are the parts that, when pollen is applied to them, produce the fruit.

In the first place, only plants of the same species will cross to advantage; that is, apples on apples, plums on plums, etc. The struc-

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ture of the flower must be carefully studied. If a cross is to be made, the two flowers must bloom at about the same time; otherwise it will be necessary to store the pollen. We should learn when the pollen is ripe and ready for use, which is usually as soon as the pollen sacks break open. To hold the pollen the stigma must be receptive, which is shown by roughness or moisture. Sometimes pollen is applied to the stigma without regard as to whether it is receptive yet or not, with the idea that it will stay on until the stigma is ripe.

Process of Pollenization. Pollenization is defined as the act of applying pollen from the stamens of one plant to the stigma of the same or different plants. In order to intelligently cross plants, we must study the character of the plant and structure of the flower.

Emasculation. Emasculation is the process of removing the anthers from the flower. Its object is to prevent self-pollenization where the flowers are self-fertile. Some care must be used in doing this not to injure the rest of the flower. First, the corolla must be carefully removed, in order not to injure the other parts of the flower; then the stamens, and the flower is ready to receive the pollen. The flower should then be enclosed in a sack, if we are to be sure that no other pollen comes to it, and also to mark the fruit. These bags should be carefully labeled with the name of the pollen used, as well as the name of the tree, written usually the mother plant x (crossed with) the pollen plant, as Wealthy pollenized with Duchess pollen, that is, Wealthy x (crossed with) Duchess. The calyx should not be removed, as this will usually cause a malformation of the fruit.

Collecting Pollen. Where a number of varieties blossom together, pollen must be collected beforehand. This means that some of it must be forced for greater ease in handling. Where a greenhouse is available, forcing is easily done. Flowers may also be forced in an ordinary, sunny window. Collect twigs, ten to twenty inches long, a week or so before the trees blossom and place them in water. As the blossoms open, the pollen may be collected in small bottles and kept till it can be used. Pollen may be collected directly from flowers on the tree, or buds may be picked and the anthers removed and allowed to open on paper, or paper sacks may be put over clusters of flowers and some pollen collected in this way.

Pollen is perhaps best applied with a camel's hair brush directly to the pistils. This wastes some pollen but is quicker than other ways. A simple way to apply is to touch the stigma with an anther which is shedding pollen. If several varieties of pollen are used, each should have its own brush, or the brush must be thoroughly sterilized with alcohol.

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It is a much disputed question as to whether to apply pollen at the time of emasculation or when the stigma is receptive, some eighteen to thirty hours later. Some experiments seem to show that it may be applied at the time of emasculation with good results. This is true especially of those varieties in which the stigmas are receptive before the blossom opens.

A careful record of the crosses made should be always kept in order that the history of any seedling originated may be known.

In preparing this article, I have used quite freely Bulletin 104, of Oregon, the Department of Agriculture Year Book, 1898, and Bailey's "Plant Breeding."

Mr. Wedge: I would like to ask Mr. Cady what kind of a bag to cover the blossoms with after applying the pollen.

Mr. Cady: Just the ordinary paper sack. The paper sack may wear off, and a sack of cheese cloth may be put on to protect the fruit. Any sack will do that will fit over the blossoms.

Mr. Wedge: How long can that be left on without injury?

Mr. Cady: They are usually left on until the fruit is set. I do not think in the case of the apple it injures it.

Bee Keeping a Side Issue.—Aside from the honey they make, there are many reasons why I think every farmer should keep bees. In the pollenization of many plants and fruits, they do a work so useful, and so necessary, that in many cases we may safely say no bees, no fruit. I would keep bees on this account alone, if they never made a drop of honey. They are cheerful, hopeful and industrious. They keep their homes neat, clean and sanitary, and spend no time scolding, sulking, gossiping or loafing. What a worthy and powerful incentive their example should be to each and all of us. So the farmer can well afford to keep bees for the example they set. He can afford to keep them for the pleasure, the fascination and the knowledge that an intimate study of their lives and habits will give him. The amount of pleasure varies somewhat, and so does the quantity of honey. Ordinarily, bees, like domestic animals, are profitable in proportion to the intelligent care given them, but the care required by bees is very much less for a given return.

Concrete Fence Posts.—Many of our members may be interested in securing a copy of an elaborate bulletin on the subject of "concrete fence posts" which has been issued by the United States Government. Address for this purpose, Office of Public Roads, U. S. Department of Agriculture, Washington, D. C., asking for Farmers' Bulletin No. 403, which will be sent to the applicant without charge.

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SECRETARY'S CORNER

RETURN THE SUPPLEMENT.—With this number will be found a supplement asking for information bearing upon problems of special interest this peculiar season with its frosts and drouths. Members are urged to fill this throughout and return if possible before the middle of August. There is nothing to be gained by postponing this service to the society. An early response will be duly appreciated.

A MEDAL FROM THE ST. LOUIS EXPOSITION.—This office is just in receipt of a handsome bronze medal—evidently a form of medal that is used for the general purposes of the exposition—awarded as a "grand prize" to the Minnesota horticultural exhibit as maintained at the St. Louis Exposition during the season of 1904. This medal has been a long time coming and will be appreciated accordingly. It is on exhibition in the office of the society, and members who wish to see it, including especially those who contributed to the exhibit, will be very welcome to do so.

A SPRAYING BULLETIN FOR FREE DISTRIBUTION.—Frederic Cranefield, of Madison, Wis., the secretary of the Wisconsin State Horticultural Society, has prepared a valuable bulletin of some 24 pages on the general subject of "Spray." It is well and clearly illustrated and makes a very compact and practical handbook on the subject. At my solicitation Sec'y. Cranefield sent me a quantity for distribution amongst the members of this society who are especially interested in the subject, and the bulletin will be sent free from this office to all applicants as long as the rather limited supply holds out.

PREMIUMS TAKEN AT THE STATE FAIR.—A communication received from C. N. Cosgrove, secretary of the Minnesota State Fair, indicates a purpose hereafter to send out with the remittance made in payment of premiums taken at the state fair a list of the awards made, so that the exhibitor may be certain as to what his awards are. There is a large degree of uncertainty under the present system of remittance without this information and often some dissatisfaction. We understand the books at the state fair were posted last year before it was decided to send out this information, but hereafter the necessary arrangements will be made in season.

FRUIT FOR THE STATE FAIR—So far little is known about the actual probability of a display of fruit at the coming state fair, but we have to make a show just the same, and if the friends of the society, those interested in its good name, and especially those who have some fruit growing in their orchards that could be shown, would write to Sec'y Latham in regard to it, it would help things along materially. We note that there are some apples in some parts of the state but are not sure always just where these are to be found, and this information also is needed. Perhaps in most cases all that will be necessary is to answer the questions in regard to this in the supplement that accompanies this number.

HORTICULTURE AND FORESTRY AT THE EXPERIMENT STATION.—The death of Prof. Green, who was professor of horticulture and also dean of forestry, leaves two vacancies in connection with the college of Agriculture that are hard to fill. For the present Prof. E. G. Cheyney, Prof. Green's assistant in the forestry department, is acting as dean of forestry

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and in charge of the summer forestry school now in operation at Itasca Park. Prof. LeRoy Cady, the assistant professor of horticulture, is acting as professor of horticulture. It would take at least two appointments to fill the place made vacant by the death of Prof. Green, and this leaves his connection with the Forest Reserve Board and other institutions not provided for.

A VICE-PRESIDENT FOR THE NINTH CONGRESSIONAL DISTRICT—On account of the removal of Mrs. Wm. Robertson, who was elected at the last annual meeting vice-president for the ninth congressional district, the executive board has made an appointment of Mr. H. L. Melgaard, of Argyle, as her successor in this office. Mr. Melgaard has had now for many years a successful experience in growing orchard fruits in and in the neighborhood of Argyle, which point is located in the extreme northwestern part of the state. He has a strong interest in this pursuit in which his experience is giving him large confidence. We may anticipate an interesting and valuable report at the coming annual meeting from this district.

THOS. E. CASHMAN APPOINTED PRESIDENT.—A meeting of the executive board of this society was held in this office on Wednesday, July 13th, the board being in attendance that day upon the funeral of our late president, Prof. Samuel B. Green. The question of an appointment of some one to serve out the balance of the year was under consideration, and the board unanimously decided to request Mr. Thos. E. Cashman, of Owatonna, to accept the appointment. This appointment carries with it also ex-officio a membership in the Farmers' Institute Board, of which our lamented president was at the time of his death chairman. Mr. Cashman accepted the appointment, and will serve as president until the regular election at the time of the annual meeting.

PASSING OF JOHN TURNBULL.—News has come to me of the death of this very old member in his eighty-ninth year. His death took place on March 18th, at his home in LaCrescent. Mr. Turnbull for a long period was a member of this society, and though not a constant attendant at our meetings, yet he was frequently there, and during these years has been well known to the writer. He was one of the staunch men of the society, was greatly and successfully interested in fruit growing, and passed on to others in his vicinity, and to his posterity, the knowledge which he had gained through many years of experience. He came to this country from England in 1853, locating soon after at the home in Houston County he still occupied at the time of his death.

NATIONAL PURE INSECTICIDE AND FUNGICIDE BILL.—Legislation looking to the end indicated in the above title was passed by the late national congress under the title of "Insecticide Act of 1910," which measure goes into effect the first of January next, regulating the standards of insecticides in so far as interstate commerce is ooncerned. An appeal from the committee of manufacturers. entomologists, etc., urges the importance of any legislation that the states may pass along these lines conforming to the national legislation. There are already several states that have some such laws that may need only a slight change to be fully in accord with the national law. The horticulturists of the country are fortunate to have secured this important legislation, and practical good may be expected from its enforcement.

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Sincerely yours
Samuel B Green.

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THE MINNESOTA HORTICULTURIST

Vol. 38 SEPTEMBER, 1910. No. 9

IN MEMORIAM

PROF. SAMUEL B. GREEN.

Died July 11, 1910, aged fifty-one years.

In preparing a biography of our lamented president, who has been so suddenly taken from us, I cannot do better than to reproduce in full the biographical sketch of his life published in the January, 1904, issue of our monthly.

"Samuel B. Green was born in Chelsea, Mass., on Sept. 15, 1859. His father was Ex-Mayor Thomas Green, of Chelsea, who held many important public trusts. He was a wholesale flour dealer in Boston for forty years.

"Although born in a city he spent all his summers on a New Hampshire farm, developing early a taste for agriculture. He determined when very young to be a farmer, and his father said if he was to be a farmer he must be an educated one.

"At sixteen he entered Massachusetts Agricultural College, but being short of funds in his third year he gave up his college course and for nearly a year worked on a milk and fruit farm, when he returned and graduated with his class, taking the first prize ($50) for the best written and oral examination on agricultural subjects.

"Two days after the graduation exercises he became superintendent of the Vine Hill Farm, of West Hartford, Conn. Here he had charge of about seventy head of Jersey and Guernsey cattle, besides other stock, and also a large amount of fruit, employing about nineteen men. After nearly a year's experience in this position, failing to see much of a future for himself in farming in New England his attention was turned to gardening, where he decided there was a better opening.

"Mr. Green now commenced his horticultural work, resolved to thoroughly master every detail, for he believed there was more profit

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in this than in other branches of farming for one with but little capital, and he often changed his employers, several times to work for less money, in order to better learn the various phases of his business. The first season he worked for a farm gardener who raised fruit and vegetables for the Boston market, and then returned to the agricultural college for a post-graduate course of six months.

"The second season he worked for James J. H. Gregory, the veteran seed and vegetable grower, and was occupied the following winter in the greenhouses of Wm. C. Strong, the well known rose grower and nurseryman of Brighton, Mass. The following spring he took charge of the horticultural department at the celebrated Houghton Farm Experiment Station, at Cornwall, N. Y., where he remained over three years. His work here, of raising and selling fruits and vegetables in one of the most famous fruit regions of the country, brought him into acquaintance with the prominent fruit growers and with the New York City fruit markets.

"It was here that his natural love for the beautiful in nature was especially developed in the landscape work which he carried on under the direction of Mr. Samuel Parsons, Jr., then in charge of Central Park, N. Y., and perhaps the best known specialist in landscape work in this country at that time, and who had the general oversight of the laying out of the large grounds of the Houghton Farm estate of 1,000 acres.

"Here Mr. Green carried on many interesting experiments, chiefly in vegetable gardening. After remaining something over three years, and giving eminent satisfaction, he felt he was not learning fast enough and getting into a rut, and returned to Mr. Strong's nursery as foreman, where he remained a little over a year. From there he went to work as foreman in the Newton Cemetery Nurseries, where he had an excellent opportunity to practice the summer propagation of nursery stock, in which he wished to perfect himself, and in which he was remarkably successful.

"From this place he was called to Massachusetts Agricultural College as superintendent of the horticultural department under his previous instructor, Prof. S. T. Maynard. There he remained nearly two years, attending to the varied duties of the large department which this institution maintains for the instruction of its students and which comprises a commercial nursery, greenhouses and market garden, the sales of which aggregated $5,000 to $7,000 per year.

"In the spring of 1888, he accepted the position of horticulturist to the Minnesota Experiment Station, and the professorship of horti-

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culture and applied botany in the Minnesota School of Agriculture. In 1891, when the agricultural college course in the state university was reorganized, he was made full professor of horticulture in the university and later his title was changed to professor of horticulture and forestry. That his work here met with the approval of the horticulturists of the state was shown by their electing him secretary of the State Horticultural Society. In this capacity he served but one year (1890), as the work was more than he could find time for. He has been for many years and is now a member of the executive boards of the State Horticultural Society, the State Forestry Association and State Forest Reserve Board.

"Since coming to the state Prof. Green has written many bulletins and reports from the experiment station. He has contributed liberally to the agricultural press and the reports of the State Horticultural Society. He is also the author of the following books: "Amateur Fruit Growing," "Forestry in Minnesota" and "Vegetable Gardening," all of which books have been revised in subsequent editions. His latest work, of similar character, is entitled "Principles of American Forestry," a text-book prepared especially for universities and other schools in the country where practical forestry is taught.

"Prof. Green is a most indefatigable worker and a ready speaker, but is withal cautious in giving advice and in reporting his experiments, so as not to mislead the inquirer. He has twice been offered the professorship of horticulture in the University of Missouri and once a similar position at Purdue University, in each instance at an increase of salary over that which he now receives, but he prefers to stay where he is, believing that he ought to be worth as much here as anywhere.

"Prof. Green's talents are of the versatile order, and he readily adapts himself to any position in which he is placed. As a tutor and disciplinarian in the school, as an experimenter in the field, as an original investigator, as an author, as a student of economic problems, as a Sunday school superintendent, as a writer or off-hand speaker, as a presiding officer—in any position where there is work to be done, or conservative and yet forceful council needed—in all these various phases of life and action he seems equally at home.

"As one of the executive officers of this society his influence is most largely felt, and he is doing much in moulding and directing the forces at work within the organization productive of valuable results.

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"Being still a young man, only forty-four years of age, with continued good health it is easy to predict a useful and successful future for the subject of this sketch. Not the least of his qualifications is that he makes every man his friend, though he is most plain spoken when plain speaking is needed—always a true friend and a loyal supporter of that which is right."

The predictions made in the foregoing as to the continuance of Prof. Green's career of usefulness were not to be fulfilled, and in the prime of his life he was cut down in the midst of his most useful service, and in the field of his every day effort. As stated in the previous number, Prof. Green died suddenly of apoplexy at the Forestry School at Itasca State Park early in the morning of July 11th. Without a

Prof. Green's residence, at St. Anthony Park.

moment's notice the attack came, and he passed away. The remains now lie in Mt. Auburn Cemetery, Boston, alongside of those of other members of his father's family.

Probably Prof. Green will be better known in the years to come as the author of a number of standard works on horticulture, the titles of which have been recited above with the exception of his latest book on fruit growing, entitled "Popular Fruit Growing," which was issued last year. This is a very complete practical treatise on this subject and, in connection with his latest revision of "Vegetable Gardening," is being very generally used as a text book in many of the agricultural schools of the country. If these books had not been written the northwest would be poorly off indeed in works on these

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subjects. At least seven hundred copies of one of his books, "Amateur Fruit Growing," has gone out from this office the past year, and many copies of the other books. There is no reason to expect a diminution of the demand.

Aside from what was written above about our dear brother, the writer would rather speak of a personal acquaintance with him, which in these years had grown to be of a most intimate character.

Mrs. S. B. Green.

Twenty years ago in 1890 Prof. Green held for a single year the office of secretary. The year following, at the earnest solicitation of the professor, the president of the society and others, the office came to the writer. After an interim of a single year Prof. Green became a member of the executive board, and from that time until his death he continued in this relationship to the society either directly or ex-officio during the last four years that he occupied the position of president.

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Prof. Green was a frequent visitor in this office, and his visits were almost always of a friendly character entirely. It seemed to be a pleasure to him, and in a sense a relaxation, to spend a little time here often and talk about matters that he had much at heart. In the many years of this acquaintance it had become a very intimate one, and I had come to know the professor so well that it seemed to me I could often read his thoughts on many of the subjects to which he referred. He was surely one of the noblest of men, clean, pure, wholesome, unassuming, earnest and untiring in the development or carrying forward any service that was placed in his hands, or that he voluntarily assumed, as he was continually doing.

The deanship of the forestry department lately established by the State University, and to which office he was appointed, came about through the efforts of Prof. Green to develop a forestry course in connection with the State University. He looked forward to the certainty that there would be in the near future a movement made for the conservation of the state forests, and that to make this successful there must be a large number of young men properly trained. With this thought he served with the forestry board and worked unceasingly to build up the forestry school and that department in the University, giving to it largely his strength and his life. This was in a sense a labor of love with him, and certainly an evidence of his ceaseless activity, as it was entirely outside of the field that he need occupy as professor of horticulture.

We are to see him no more, and personally I feel to be the greatest loser, although there are undoubtedly scores of others who have a similar thought, as Prof. Green had a faculty of endearing himself to all with whom he came in contact.

On Sept. 15, 1887, Prof. Green's twenty-eighth birthday, he was married to Alice Hazleton, of Wellesley Hills, Mass.,—a most worthy and devoted helpmate—who survives him, as also an adopted son, Nathaniel.—Secy.

PROF. GREEN'S LAST HOURS.

These extracts from a letter written by Prof. E. G. Cheney, Prof. Green's assistant in charge of the Forestry School at Itasca Park, recite particulars of his last hours which must be of interest to his friends, and it is for their perusal they are published.

"Prof. Green drove out to Itasca Park with Mrs. Green Sunday morning. He had dinner at Douglas Lodge and continued his trip to our place in the afternoon. I did not know of his arrival or that he was definitely expected till he shouted to me from his cottage just before supper. He took supper with the boys at the dining hall and

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seemed in the best of spirits. After supper I had a long talk with him. He was cheerful as usual, and his chief care seemed to be to have me teach him to play tennis. He had just bought a new racket and brought it up with him for that purpose. I promised, and he seemed very much pleased.

"In the morning he had breakfast at the dining hall and seemed as well as ever. Shortly after breakfast he started out on a tour of inspection with Mr. Stillwell. He passed by my cottage swinging his umbrella gayly like an Indian club in spite of the fact that it was raining fairly hard. When they were on the way to the barn Stillwell happened to remark:

" 'Prof. Green, you are not looking as well as you did last year.' You know he did look rather badly after that sickness of six weeks ago. Prof. answered:

" 'Oh, that doesn't matter. I have never felt better in my life.'

"They walked on about a hundred and fifty feet to the new barn still uncompleted. A little way inside the door he stumbled and sank without a word on the sand floor. Stillwell thought he had merely stumbled and stooped to help him up but had to call two of the workmen to assist him. He sent a man for me. They had Prof. Green outside of the barn, and he walked fairly well with their assistance. Stillwell tried to persuade him to go to the house to rest, but he insisted that he was all right and shook them off. He did not seem to realize that he had been down at all. He said:

" 'This is a pretty nice barn you are building, Stillwell.'

"Stillwell looked up at the barn, and Professor Green fell forward into his arms. This was at 8:45 a. m. He never spoke again. They sat him down on a pile of cement floor blocks and put cold cloths to his head. I got there then. Just as I came up he gasped once or twice. Not knowing what had gone on before, I thought he was recovering from a faint. We carried him into the barn and laid him flat on some sacks and rubbed his hands and feet. I tried his pulse and could feel nothing. We continued to work, in spite of the fact that I was certain he was dead. We all thought so, but were afraid to say so. * * *

"The rest you know as well as I do. No one could realize it. Even yesterday Tierney asked me about something and I answered: 'Professor is arranging that now.' Neither of us noticed it for some time afterward. He was a man that no one man can replace."

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A Tribute to Prof. S. B. Green.

(Delivered at his funeral by Cyrus Northrop, President Minnesota State University.)

A great sorrow has come to us all. The friend whom we loved, the man whom we honored, the scientist on whose knowledge and skill we relied, and the executive whose forceful and wise carrying out of plans gave the fullest assurance that everything committed to his management would be most successfully done, has been stricken down in a moment, when apparently he was in the full vigor of virile strength, in the very flower of healthy manhood. What it means to him we do not know. Whether in a moment he passed from the activities of a strenuous life in the service of the state to a full realization of immortality—eternal life—we do not know. But we do know what it means to us, his friends, his colleagues, his associates, his co-laborers. For us it means loss—irreparable loss—for us it means bereavement and sorrow. For us it means a realization of a great place left vacant by his departure—a place which we feel sure no one can ever fill to the full measure that he filled it.

Samuel B. Green came to us from Massachusetts in the early days of the agricultural department when the future of agricultural education was very uncertain. He was professor of horticulture. At first he had little equipment for the development of his work. But he did what was possible. As the years went on, and the inner life of the agricultural department became both more peaceful and orderly, the Department of Horticulture grew in importance—buildings and equipment were provided, and Professor Green could point with pride to his department as successfully doing its work—and he might have been content with that, but he was not. He had a noble ambition to lift the College of Agriculture and make it as truly an agency for higher education as any of the other colleges of the University. He carefully planned the curriculum, and as chairman of the committee on the course of study he secured the adoption of the present high and excellent curriculum. So far as the College of Agriculture is concerned, Prof. Green was the man who moulded it into its present shape and gave it the resulting attractiveness. But he was not content with this. His mind was actively engaged all the time in finding ways by which the work in agriculture could be extended. He was a member, and a most influential member, of the board having in charge the Farmers Institutes, by which so much good has been done for years past. He was practically the executive in charge of all the extension work in agriculture provided for by the last legislature.

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Governor Rice and I were associated with him in this work—but I am sure Mr. Rice would be quite as ready as I to bear witness that it was Prof. Green who planned and who executed the plans—and I recall with wonder his complete mastery of the details of this whole work, and his never failing attention to the work at the right moment, notwithstanding his many engagements in his own special work.

And then he was president of the State Horticultural Society. He put a new life into this organization, and the faithful old men who for years had been working together in the society must have been cheered and delighted when this young, forceful, wise scientist, with full knowledge and hearty sympathy, took hold of the work with them and gave them assurance that it would be a success.

And then he was in touch with farmers all over the state. He was interested in the establishment of schools of agriculture and helpful to those who had the duty of locating such schools. In short he in a way pervaded the agricultural life of Minnesota, and wherever men were interested in getting food from the earth they could always find a sympathetic friend and earnest and safe counselor in Prof. Green.

But even this did not fill up the measure of his activity. He became interested in forestry, and his vision of future forest reserves, and of the work to be done in connection therewith, the training of masters of forestry, the cultivation of trees, the enrichment and beautifying of large regions otherwise useless—his vision of all these things was so clear that his hand was stretched out to grasp them, and had he lived to the full measure of years he would undoubtedly have grasped all that he had seen in vision. As it was he had already accomplished much, securing thousands of acres for his work—while he himself had become one of the leading authorities in the country on forestry. Only a few weeks ago, the board of regents formally organized the Department of Forestry and elected him dean of the department.

But why should I enumerate his work further? A man of restless energy, never happy unless he was doing something, never so happy as when he had done something worth while, his life was literally filled full with usefulness and duty.

We honor him for the grand work he has done. We honor him for being the grand man he was. If at any time his associates did not agree with him in some respect, there never was a time when they were not ready to praise him as the man who does things. And as I recall the momentum which he always seemed to have gathered before

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putting propositions for new enterprises before me, there comes over me an appalling sense of irreparable loss in the death of this courageous, strong, enterprising and public spirited man of science, educator, forester, citizen.

And that is not all. It is a noble record of work that he has left behind him. But I like to think of him as he was—a true man, clean in his life, of heroic attitude against evil, he would have been a crusader if he had lived in the time of the crusades. As it is he carried the same spirit into his fight against ignorance and poverty and unhappiness, and bravely bearing his own burdens without a murmur he did what he could to the very last to make the world better and happier. Farewell, dear friend! We shall meet beyond the river, and may our crowns be as bright as yours surely will be!

Resolutions Passed by the Executive Board on the Death of Prof. Samuel B. Green.

(Prepared by Mr. Clarence Wedge at the request of the Board.)

In view of the dispensation of our Heavenly Father removing from among us our honored president, fellow worker and companion, Prof. Samuel B. Green, we the Executive Board of the Minnesota State Horticultural Society, desiring to express our appreciation of his character and services among us have passed the following resolutions:

That in the death of Prof. Green the State of Minnesota has lost one of its most useful citizens; one that has filled positions of the greatest importance not only with conscientious fidelity but with an enthusiasm for accomplishment that stands forth as a model of efficient public service.

That in the line of his chosen occupation of horticulture, in bringing order out of the confusion of the early pioneer experiments, and in systematizing the horticulture of the North he has done a monumental work for which his thorough preparation and practical turn of mind peculiarly fitted him. In organizing the Horticultural Department of the College of Agriculture of the University of Minnesota and providing it with text books suitable for the part of the country for which it stands, he accomplished a difficult task, the success of which is abundantly attested by the success of the school and the general acceptance of his books as the standard authority in Northern horticulture.

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That his work in laying the foundations of practical forestry in our state has been one of the great achievements of the past decade and will be held in greater appreciation and esteem as the years go by. When he came to our state twenty-two years ago nothing had been done in forestry, and the subject was one generally held to be visionary and of little or no practical importance to the state. He has left us with forest reserves, a beginning in practical forest planting, and a well organized College of Forestry, and with the marks of his genius deeply set in each of them.

That while we are proud of his record as a citizen, while we hold in the greatest esteem his services to our society and our art, it is the qualities of the man, the fellow worker and comrade that will abide with us and from which the choicest lessons of right living can be drawn. His goodness, his strength and his cheer, it shall ever be our delight to hold in memory and to recall to one another, a combination of perfect health and sweetness of body and spirit that is as rare as it is delightful. He has left to the state that which will bring to it a wealth of natural resources, to the society and the horticulturists of the North he has given a thousand things that will assist them in their work, to us who knew him he has left the priceless memory of a noble life and an assurance that it is still going on.

In Memoriam.

S. B. G.

Rocks, trees and flowers he loved,
The woods his temples were;
Of horny handed toil the friend,
Of Pan the worshiper.

He stood before the demagogue—
Fearless and full of might—
Time-serving politicians turned
And sometimes voted right.

We may not see his like again—
A teacher, leader, friend;
The cause he loved for workers calls,
May Heaven such workers send!

—Lycurgus R. Moyer.

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In Memoriam.

S. B. G.

Sadness but partially expresses my feelings at the loss of one of my dearest friends. I have often been greatly impressed with the versatile mind of Prof. Green and wondered from whence he derived his great initiative ability to perform such a wonderful amount of mental work.

My mind reaches back to my first impression at the annual meeting of our Horticultural Society, twenty-one years ago, when he made his maiden speech before our members. He said:

"I feel that I have an important work to perform in the department placed under my charge on the state experiment farm. So long as I have charge of the horticultural interests of Minnesota I would like to receive kindly criticisms and suggestions concerning my work, so that we may be mutually benefited. I shall always be glad to profit from your counsel and advice. I have not come here merely to draw my pay, but I expect to give an equivalent for what I receive. I don't expect to work miracles, but I do expect to be able to produce something that may be worthy of your consideration"—and the past twenty-one years of service in the interests of horticulture and kindred pursuits is a record of which any man might be proud.

When I say the state has met with a great loss in the passing of Prof. Green, I am only saying what is in the minds of all who knew this honest, forceful, intense worker for what he considered the best interests of all the people of our great commonwealth.

His life was a most worthy example of a self-made man, a beacon light that any young man might follow with safety.

He was removed from this life at a time when it seemed we could little afford to spare him. I shall always remember Prof. S. B. Green as one of my closest friends.—Wyman Elliot.

In Memoriam.

S. B. G.

The passing of Prof. Samuel B. Green has cast a gloom over the many thousands of people who had learned to know the man and appreciate the valuable services he had performed for the state and nation. Many people have a vague idea of the work he has accomplished, but few fully realize its magnitude. He came to Minnesota at a time when the line of work in which he was engaged was prac-

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tically in its infancy. The building up of the greatest agricultural school in the United States has been due in a large measure to his wonderful executive ability and his unequalled ambition to excel in all his undertakings.

There are few men who have accomplished as much for Minnesota and the Northwest as Prof. Green, and he was apparently in the height of his usefulness when taken away. Those of us who had the good fortune to be in a position to know the many virtues and attainments of this splendid man cannot help but realize that the state and nation has lost a leader and one of the noblest of its citizens.—Thos. E. Cashman.

In Memoriam.

S. B. G.

I can hardly find words to express the loss I feel in the death of our loving friend and companion. During a long and intimate acquaintance he always manifested those qualities of mind and heart that won to himself the love and admiration of all persons that he met, whether socially, along educational lines or in a business way.

His social qualities endeared him to all, and his hospitable home reflected a genial kindness on all who entered its portals.

In horticultural education he "blazed the trail" and led the procession in the knowledge that was necessary to success under the new and difficult conditions of the Northwest. His text books on horticulture have met with wide favor and are considered the highest authority. It has been said that the initiative in one's character is the chief element of success, and this Prof. Green possessed to a remarkable degree. He could originate more work and turn it off in less time than a dozen other men. He had high ideals, rare good judgment and splendid ability.

I loved Samuel B. Green, as did all his horticultural associates. While his career of usefulness here is suddenly ended, he has left an influence for good that will never end. I am glad to think that his great spirit even with greater ability will some time come back to earth to take up again the work he loved so much.—J. M. Underwood.

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In Memoriam.

S. B. G.

The shock at the announcement of the death of Professor Green was not confined to his family and immediate friends, nor to the three thousand members of the State Horticultural Society of which he was president. But the young people who have enjoyed the privileges of his instructions for so many years and are now living in many states —and all lovers of horticulture and forestry and out-of-door life— are all mourners and sympathizers.

In the passing of Samuel B. Green, horticulture and forestry have lost a most proficient and enthusiastic worker—yet not lost, for who can tell the extent of good that will continue to come from his teachings and influence for the last score or more of years at the University and School of Agriculture, as well as his publications, that have become so generally adopted by practical growers, amateurs and in the class room.

Minnesota was especially favored in securing the services of such an able instructor and organizer to assist in laying the broad foundations of such an institution as the one from which he has just been called.—J. P. Andrews.

In Memoriam.

S. B. G.

It seems incredible that death has so suddenly deprived us of one of the apparently most vigorous of our fellow-workers. That a personality so strong, virile and forceful can vanish so completely, as far as we are concerned, leaving only a memory, appears at this time so impossible, that the sudden taking away of Professor Green seems a dream from which we will shortly awake to find him still with us. His earnestness and frankness were unique and attractive. While he and the writer did not always hold the same views, and have had many an argument in the past, yet we always left him at their conclusion with a secret admiration for the man who had the courage of his convictions, and did not hesitate to express them openly. We rarely find an individual now who says what he really thinks. This Professor Green did, and his frankness was refreshing. That we shall miss him, and miss him sorely, goes without saying.

Whatever man or men the Board of Regents may select to fill his place, it will be years before his successors can get in as close touch

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with all of the interests and projects he handled so well at the time of his sudden death. Surely, this unexpected calamity should teach us how uncertain life is, and be an incentive to use to the utmost whatever talents we have, filling each day full of service to mankind.—Prof. F. L. Washburn.

In Memoriam.

S. B. G.

Horticulture in the State of Minnesota has suffered a great loss in the death of Professor Green. It is safe to say that no one man has done more for the development of horticultural science in this state than he, and all the newspapers will doubtless award him this first place, but I desire to speak of him as the head of the State Horticultural Society and as the presiding officer at its sessions.

Here was Professor Green particularly effective, happy and agreeable. He knew personally nearly all the members of the society who ever attended its meetings and could call most of them by name. His occupancy of the chair always carried with it to the audience a sense of confidence, of restfulness and a general feeling that everything was all right. As such presiding officer Professor Green never gave offense. Members who were disposed to be a little too prolix, or long-winded, or who strayed from the subject, were promptly set right with a smile and perhaps a joke, but the business of the society went along briskly, promptly and with great interest.

His continued good humor, the ability to see the joke, and appreciate it at its true value went far to free the proceedings from any humdrum prosiness, and his bright smile and quick interpolation frequently "saved the situation."

But above all his integrity as one of the custodians of the horticultural interests of the state commended him to the admiration and indeed to the gratitude of the men striving to develop Minnesota's horticulture. The "fruit list" was Professor Green's especial care and pride. He stood like a rock in defense of its integrity. He felt as do all his fellows that the integrity of the list of fruits recommended by the state society to the people of the state for planting, for propagation or for experiment, must be maintained at all times and at all hazards. He felt that though mistakes might be made, there was no excuse for taking any known and unnecessary risk.

From time to time there have been disappointments perhaps to nurserymen who felt that the varieties of fruits which they had originated or which they were promoting should be endorsed by the

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state society, but the president always advised caution. "We had better wait another year and see whether the reports from our trial stations and from others who are experimenting with this fruit will bear out the good words of today." It was a favorite saying of his that "We must make no mistakes in our apple list."

He was not alone in this; there are a dozen veterans in the organization who stood with Professor Green in the past who yet remain to guard the public interest and protect and preserve the integrity of the fruit list.—J. M. Barclay, Madison Lake.

In Memoriam.

S. B. G.

A near friend and brother has left us—gone to his final home from which none ever return, gone to that beautiful land where the sun never sets and storms never come. We are scarcely able to realize this sad and unexpected event. No pencil can show the real value he has been to the cause of horticulture, even over the world, and especially over the great and untried Northwest. Nor need I add here, no pen can picture those sterling qualities of genuine manhood so often shown. His hand was ever up to welcome and aid any and all measures that appeared to favor and extend honest horticulture. On the other hand he was always ready to speak out openly and boldly, neither turning to the right nor to the left to please any he thought were working more for their own interest than for the benefit of the masses. In short his sole object has always been to hew to the line regardless as to where the chips flew or who they hit. I do not by any means envy the man on whom his mantle may fall. He will find it a most serious task to even equally as well fill the position which by accident appears to have so suddenly come to him.—Edson Gaylord, Nora Springs, Iowa, a well known honorary member for many years of the Minnesota State Horticultural Society.

In Memoriam.

S. B. G.

I have heard of the awful calamity that has befallen the Minnesota Horticultural Society, the state and the whole country in the death of that able, indefatigable and lovable friend, Prof. Green.

I was not intimately acquainted with him but had learned to admire and love him. His was a work that was of untold value to future generations in all this Northwest.

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To know that one of such generous and kindly impulses, of such untiring energy, of such magnificent equipment for service, and one who gave himself so readily to the development of the best things for his adopted state should be cut down in the prime of life and in the height of his usefulness, is to confess that life and death are mysteries that the human mind stagger under. I would like to lay one little flower on his now quiet resting place. He was dear to some of us outside his adopted state.—Eugene Secor, Forest City, Iowa.

In Memoriam.

S. B. G.

I cannot yet bring myself to realize that Prof. Green has gone from among us, seeing him, as I always have, in apparent health and strength, full of energy and hope, and working with intelligent zeal for an ever growing horticulture here in the Northwest region. I remember him as always bouyant, but discreet and practical. Horticulturists of adjoining states had come to know and love and appreciate him for his earnest and resolute purpose in his chosen field of progressive horticultural education.

To me his death is the loss of a personal friend. I was greatly shocked on learning of his sudden demise. Although he has accomplished so much, the passing of such a man is still a great and seemingly irreparable loss to his friends and to his state. Few will miss him in the horticultural gatherings more than his long-time friend—Chas. G. Patten, Charles City, Iowa.

In Memoriam.

S. B. G.

I am not surprised that you were stunned by the shock when the news reached you of the sudden death of our dear Prof. Green, who was indeed dear to every one of our membership, at a time when he was in the midst of such a useful life.

It seems almost an irreparable loss to Minnesota. I can only exclaim, "Why was he taken?" Surely "God moved in a mysterious way."

The world mourned the loss of Abraham Lincoln. Nations have mourned the loss of kings and presidents. But it seems to me that the State of Minnesota has been subjected to more than her share of sorrow and grief in the loss during the last twelve months in the midst of their useful lives of four such men as Governor Johnson, Hon. S. M. Owen, Prof. Wm. Robertson and Prof. Samuel B. Green.

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This loss falls especially heavily on the Minnesota State Horticultural Society and the Minnesota School of Agriculture at this time. No doubt that you, as secretary—and Prof. Green's widow—are receiving so many well written tender words of sympathy that anything I might say would be superfluous, but please allow me at this time to make an appeal to the young men of your state and your School of Agriculture to so shape their lives and habits in their pursuit of knowledge that they may attain to those noble traits of Christian kindness that were possessed by Prof. Green, so that one or more of them may prove himself capable of filling the professor's place in your great School of Agriculture. If my life should be spared to attend the next meeting of the State Horticultural Society, it certainly will be a feeling of sadness to note Prof. Green's absence from the president's chair, which he so worthily and acceptably filled, and also to note the absence of those other staunch friends of horticulture and forestry, S. M. Owen and Wm. Robertson, whose kindly words of advice always cheered our meetings.—A. J. Philips.

In Memoriam.

S. B. G.

I hasten to express to you the deep sympathy felt by the officers and members of the Manitoba Horticultural and Forestry Association with the Minnesota State Horticultural Society at the loss sustained by your society through the all-too-early death of Prof. S. B. Green, whose valued presence was much appreciated in Winnipeg last February. Doubtless a formal resolution will be passed by our association at its next annual meeting. In the meantime please accept this informal expression of sympathy.—H. M. Speechly, President Manitoba Horticultural and Forestry Association.

We have just learned with sincere sorrow of the death of Prof. Green. The horticulturists in session at the Graduate School of Agriculture here at the Iowa State College have sent messages of sympathy to Mrs. Green and also to Dean Woods. I am sure that they wish also to give similar expression of sympathy to the Minnesota Horticultural Society, with which Professor Green has been very actively identified for many years. We cannot realize as you do how much his inspirition and hearty activity in all good work will be missed by the members of that society, but we know that in his passing from our midst American horticulture has met with a distinct loss.—Prof. S. A. Beach, Ames, Iowa.

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In Memoriam.

S. B. G.

The sudden death of Prof. Green was a terrible shock. Only a few days before we dined together at Hotel Vendome, Minneapolis. For years we have been close friends, visiting back and forth. I induced the associated societies of Nebraska to call him for an address. He had 1,000 hearers, and he delighted them by having something to say and knowing how to say it. He was one of the most genial and magnetic men I ever knew. He was president of the Minneapolis Horticultural Society, the largest numerically in the world. He was the "master of assemblies." You could feel the thrill of his energy and enthusiasm through the great gatherings. Everything was on time, and the program seemed surcharged with vigor. He was in the fullness of his prime. He died in the harness. He was probably overworked and this added to the terrible and unprecedented heat, was too much. No man has done more for forestry and fruit growing in the Northwest. His name is a household word. He published several books which will keep his memory fresh for long years to come. He was a Christian and had a warm heart. While carrying on important educational work, I often appealed to him and found a ready response. In the course of nature he should have staid with us twenty-five years yet. But he has rounded out a full life, and among hundreds of young men who have been under his influence there will be scores who have caught his spirit and will carry on his work.—C. S. Harrison, York, Nebraska.

A Champion of Forestry, Prof. Samuel B. Green.

(Am. Lumberman, Chicago, July 23.)

Fortunately for human progress, there arise from time to time men inspired with no other motive than the joy of working for the welfare of their fellows. Of such a one—a sturdy leader in a great cause—the country recently has been bereft.

In Samuel B. Green forestry had a noble champion. He was a sane, conservative but none the less persistent worker in the cause which in late years had become his life work. Just as the science of forestry itself is the outgrowth and development of agriculture, so Prof. Green, originally a scientific agriculturist, ultimately became a scientific forester. He long ago realized the importance of forestry as a science and he realized also that to succeed forestry must be prac-

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tical and useful, and he bent his efforts as professor of horticulture in the University of Minnesota to the building up and developing of the forestry work of the university.

Prof. Green was essentially of a judicial temperament. He saw both sides of every question. He possessed the one faculty that is indispensable to leadership in any movement in which interests are varied and conflicting. He was not a radical partisan or advocate of any policy, party or interest. He understood, recognized and respected the rights and opinions of all. His advocacy was in the direction of education. He knew that the forests must be used to be conserved, and it was his chief end and aim to teach the people to know that true conservation of the forests is synonymous with their proper use. Thus in his policy the theoretical and practical were so combined and harmonized as not to arouse the antagonism or opposition of any interest. He had the fullest confidence and respect of lumbermen and all who knew him.

After twenty-one years of labor in the university the results of his efforts were perpetuated in the creation of the forestry school of the university. At the June (1910) meeting of the university regents the forestry department was raised to the dignity of a separate school and Prof. Green was made its first dean; a fitting honor to sweep away all recollection of the struggles and discouragements of a score of years.

The establishing of the forestry school was viewed by Prof. Green as but the opening up of greater opportunities for exercising a wider influence and performing a greater service in forestry work. Accordingly, he immediately took hold with renewed energy to do what he conceived to be his larger duty as the head of the forestry school of a great university of a great lumbering state. It was in the performance of this duty he was stricken. * * * *

It nearly always is true that students under such a teacher as Prof. Green are, through his example and teachings, inspired with the same lofty motives that have impelled their teacher. His influence will be connected but throughout the West where he was such a power for the advancement of forestry and conservation.

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Two Minute Talks.

(This record of the closing hour of the last annual meeting, at which our lamented brother presided, seems to find fitting place in this memorial number.—Secretary.)

The President: The time has now come for closing our annual meeting, and it has been our custom for many years to call upon various members for short, two-minute speeches. I say short two-minute speeches advisedly. As I have a list in my hand here of those upon whom I expect to call, I wish to have it understood that the talks must not exceed two minutes. I am going to call first upon our good old friend, Capt. Reed.

Capt. A. H. Reed: Well, I suppose I have got to speak my piece. I want to say that our meetings grow better and better, and I am wondering how many years longer they will continue growing better and better. When I see that membership of three thousand and twenty-three, I expect next year to come back here and hear Brother Latham announce a membership of four thousand and twenty-three. There is no doubt of it at all, this has been one of the most enjoyable meetings I have ever attended, and I shall go home feeling first-rate; and I also want to say I have no grudge against Brother Wedge because he has killed the Peerless, nor against the man who says apple trees should be placed on a north slope, nor against the man who would prune an apple tree so high that you couldn't get into it with a ladder; and on the other hand, if I have said anything here the rest of you didn't like, I beg your pardon. (Applause.)

The President: Now we want to hear a few remarks from Senator Probstfield.

Hon. R. M. Probstfield: I cannot speak, I was so touched at being elected an honorary member. I thought I was not entitled to such an honor, and it has overcome me to such an extent that you must excuse me from attempting to speak. I know we come together here to pat each other on the back, and I look forward to these meetings when we can come together and have the privilege of patting each other on the back.

The President: We always enjoy having Senator Probstfield with us, and we hope he may be spared to us for many years. Next I am going to call on Hon. A. W. Krueger, of South Dakota.

Hon. A. W. Krueger (So. Dak.): I can hardly find words to express myself regarding the kindness I have received at your hands while in attendance at this meeting. When I go home to South Dakota and attempt to tell the people what you have done here, I shall have to repeat what was said by the Queen of Sheba long ago, "The half has never been told." I can tell your sister state of South Dakota that yours is a great state, but greater still is the privilege of the citizens of South Dakota of coming here to learn from you, and they should avail themselves of the privilege of sending delegates here, delegates who can carry back with them more than I can. It was an inspiration to come here and see things as they were in olden times, to see these beautiful groves and to see these prairies reclaimed from

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the wilderness, and when I went back to Dakota, I said, "What man has done, man can do." When I went down into your exhibit room and saw that beautiful fruit, I said to myself, "Is it possible that Minnesota is not only a great grain growing state, a great corn producing state, great in every line of agriculture, but she is also becoming great in the production of fruit, and there is no reason why we should go to California or Oregon when we have all these things in Minnesota?" But better than all that is the example that Minnesota sets us, for what you are doing here we shall try to do in South Dakota. Our next horticultural meeting will be held at Yankton, and if this society will honor us with a delegate, I will do all in my power personally to make his attendance a pleasure and a profit, and I shall also do all in my power to have our society send delegates to your meeting, because I want others to share the pleasure I have had—and not only the pleasure but the great profit I have derived in attendance at this meeting. It is a great feast, it is like coming home, and if I do not come as a delegate, I shall be here anyway. Nothing can keep me away! (Applause.)

The President: I want to assure Mr. Krueger that we enjoyed his presence here very much, and I trust we shall have the pleasure of having him with us every year. Now I am going to call upon Rev. C. S. Harrison.

Rev. C. S. Harrison (Neb.): I am glad to be here. I think sometimes of the poor relation that went to see his brother-in-law. One time his brother-in-law found him crying and he said, "Jim, what are you crying about? Are you homesick?" Jim said, "No, I never want to go back again." (Laughter.) I feel somewhat the same way; I don't want to go back again. Every time I come here I am more impressed with the possibilities of Minnesota. We have a glorious state down there, but Minnesota goes ahead of us in many things. You can raise evergreens, and I got started at Paynesville, and I am ashamed of my own state when I go up there. It is amazing the fruits and flowers and beautiful things of all kinds you can grow here, and I tell you you can pull down a section of paradise in Minnesota and live in it.

The President: We always enjoy having our poet with us. I am now going to call on Mr. A. K. Bush.

Mr. A. K. Bush: I regret very much that I was unable to enjoy all the sessions, but other things came in the way and made it impossible. I anticipate these meetings from year to year because of the great pleasure and profit I derive from them. As I travel over the country, I can see so many evidences of the good the society is doing and has done, not only as I meet people planting trees and evergreens —and I place them next to fruit trees—but in the way of making home attractive, and making this state beautiful for those who come to us from the eastern and southern states to make their homes among us. And as these people are coming to us in large numbers from the east and south, they are paying a great deal of attention to homes for their families where evergreens and fruit trees especially are planted.

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I am glad to say that this society is the means of pushing this work more rapidly than it has ever been done in the past.

The President: I will now call on Mr. Terry for a few remarks.

Mr. Alfred Terry: I have tried to apply in my home the good things I have learned in this society. I have been with it something over thirty years, and I have always tried to put into practice what I learned here. The neighbors know it. There is not a better shelter belt in the whole country than mine, and when I go back to my home, I feel that I owe everything about that home to this association. I am not always here except in spirit, but my heart is always here; I always think of you in the first of December. I think you have heard enough from me, and I simply want to say again while I am here that I want to thank you for making my home one that I can be proud of and one that I can enjoy.

The President: Now we want to hear from Mr. Kenney, whom we are delighted to have with us again.

Mr. Seth Kenney: I have had the privilege of meeting with this society for nearly forty years. The fruit exhibit this year is the best I have ever seen in all that time, and I can see each year we are making immense progress. This society has placed Minnesota in the front rank as a state devoted to horticulture, and especially the growing of apples. The apples in the exhibit room speak for themselves.

The President: Now I am going to call on Mr. Philips.

Mr. A. J. Philips (Wis.): I can't go back quite as far as Brother Kenney, but I thought of the first meeting I attended at Winona thirty-six years ago, when Truman M. Smith was president, and I have attended them regularly ever since. He was a man I respected very much. Mr. Loring spoke of these old pioneers this morning, and I will not speak of them except of Mr. Smith. I cannot look upon that list of names without thinking of the work Mr. Smith did. Now, coming to these meetings, I want to say I enjoy them. As I told you last year, if I didn't enjoy them, I wouldn't come. My wife came with me last year, and this year she wouldn't let me come alone, so she sent my daughter along. I can tell you how this happens. In our society in Wisconsin we had a gray haired old man by the name of Reed; he always got a premium on crabs. He was a good old man. We had poor accommodations at Madison during fair time, and we slept in our horticultural building. We didn't go to sleep right away; we talked of horticulture, told stories, and had a good time generally, as we always do at these horticultural meetings. Uncle Reed went down town one Wednesday evening after he got through with his work, and he got a little too much Scotch whisky inside of himself. During the evening he lost his ticket into the fair ground. He couldn't get in and was wandering around when a policeman stopped him and said, "What are you doing here?"

Uncle Reed said, "I had my ticket to go in here, but I lost it."

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"Well," the policeman said, "You can't wander around here all night; I had better take you to the lock-up. What do you want to go in here for anyway?"

Uncle Reed said, "I belong in the horticultural building."

The policeman said, "Not much, I know better; those folks don't get drunk, and you are drunk."

Uncle Reed said, "I don't want to go to the lock-up, but if you will go down with me, I will prove to you that I belong in the horticultural building."

The policeman was a pretty white sort of a fellow, and he didn't want to run the old man in, so they came down to the horticultural building, and as soon as they come in the door I diagnosed the situation exactly. The policeman said to Uncle Reed, "Now, have you got any friends in here?"

Uncle Reed said, "Yes, I have a son in there, but there is another man there by the name of Philips who knows me better than my boy does."

The policeman came in and said, "Does this man belong in here?"

Now, his son was a man about twenty-five years old, and he was ashamed to see his father drunk, so he went off to bed. Well, I felt a good deal of sympathy for the old man, so I helped him undress and put him to bed, and before he went to bed he said, "Philips, won't you have something with me?"

I said, "No, I don't drink, Uncle Reed."

He said, "Oh, excuse me, don't you ever drink?" I told him no, I never drank.

In the morning he got up and was feeling a little better, but there was a hungering in that old man's soul to do something for me, and he did. He took me off in a corner and said, "Philips, do take something with me; it will please me very much."

I said, "Uncle Reed, I have attended these fairs for years, and I never drink anything but water."

He said, "Oh, excuse me, Philips, I thought when you attended these meetings you were drunk half the time." (Laughter.) I went home and told that to my wife and she said, "If that is the way you behave, you had better stay at home," and since then she sends one of the family with me or comes herself.

I have enjoyed this meeting. I think the show of fruits is the best I ever saw anywhere in winter. Capt. Reed—I like him awfully well because he says what he thinks—said there were too many small apples, some ought to be thrown out, and he wanted a premium offered for the Jonathan apple. Now, I want to tell him that the smallest apple I have is a top-worked Jonathan. Both the Jonathan and the Grimes' Golden were small. I would not throw anything out. Some fellows cannot raise anything but poor ones anyway, and if you throw out those apples they would not have anything. It doesn't cost much, and you can please a whole lot of people. I would not turn anything out because, perhaps, some time, I might want to bring such things myself.

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The President: We are always glad to hear from Mr. Philips. Now I am going to call on Mr. Brackett.

Mr. A. Brackett: Mr. President and Fellow Members: The first thing I want to do is to thank you for the honor you have conferred upon me in making me a life member of the society,—something I did not expect. It took me so by surprise that I can hardly express my feelings concerning your action. I want to say this to you. As I travel over the state, I am proud to be able to tell the people that I am a member of one of the best horticultural societies in the United States; one that has the largest membership of all similar societies in the world. We should all be proud of this society, and when we have an opportunity to say a good word we should not neglect it. If our friends will get behind this horticultural society in the future, as they have in the past, we will not only make it larger and better, but we will have apples that will be just as good winter apples as the Wealthy is a fall apple. We are doing some magnificent work right now along that line at our little farm which the state bought for us, and we will certainly originate those winter apples. I want you to remember that as you go home, and whenever you have an opportunity speak a good word for the Minnesota Horitcultural Society.

The President: I just want to refer for a moment to Mr. A. D. Leach, who passed away about a year ago. He was a very delightful gentleman, and we have missed him at our last two meetings. He always attended the meetings when he could do so. He was a delightful companion, a high minded man and a good horticulturist.

I am next going to call upon Mr. Arrowwood. He is a man who is doing a great work in originating seedling fruits. I believe it is the first time we have had the pleasure of seeing Mr. Arrowwood at these meetings.

Mr. Jas. Arrowwood: This is the first time I have had the pleasure of meeting with this body, and I am proud to have that privilege. I have been a horticulturist for some forty-five years, but I have never been identified with this society until about a year ago. I have been working along this line for a great many years and have abounding faith in the future. I believe that in a few years we shall attain the definite results we are aiming at now. We shall have not only the apples we want, but I believe we shall be able to grow pears in the state of Minnesota. I firmly believe in twenty-five years from now this will be the leading fruit section in the United States if we continue to progress as we are progressing now, and there is no reason why we should do otherwise. I have seen marvellous things accomplished along horticultural lines, and I want to say that I am glad to be a member of this society, which is doing so much for the development of horticulture. I am glad to be with you and hope to come again.

Mr. C. M. Loring: I wish to offer the following resolution:

"Whereas, There is about to be elected a dean of the School of Agriculture of Minnesota, and whereas, Prof. Samuel B. Green has been connected with this school for many years and has contributed

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largely to its success, and has been instrumental in placing it in the front rank of agricultural schools in this country; therefore, be it

Resolved, That the Minnesota State Horticultural Society respectfully recommends to the regents of the University of Minnesota the selection of Prof. Samuel B. Green as dean of the agricultural college."

If there is a man in this entire country who is entitled to the deanship of the agricultural college, it is Prof. Samuel B. Green. (Applause.)

Prof. S. B. Green: It is very delightful to feel that my friends are interested in me and believe in my ability to fill that very important office in a way that would be satisfactory to you and in a way that you believe would be satisfactory to the citizens of the state. It is an important office. It is different from almost any other educational position in this state, for the reason that it is in close touch with a great economic interest, and if it is properly developed it will be in closer touch. I should consider it an honor to be elected to that position, but I have taken this ground, that I do not want that position unless it was by unanimous action, because I have ideas of my own on that proposition, and I would want the opportunity to carry out my ideas. I have done nothing to urge my candidacy, at the same time I appreciate the honor of your endorsement of me for this position; but I do not expect to have the position, and I hope the Board of Regents will fill the position with a man who will be an honor to himself and a credit to the state. (Applause.)

The President: I am now going to call on Mrs. Clarence Wedge. She has attended a number of our sessions, and we would be pleased to hear a few words from her.

Mrs. Clarence Wedge: It would be ungrateful for anyone who has enjoyed these meetings as much as I have enjoyed them not to respond to such an invitation and express one's appreciation, but I am entirely unused to public speaking. I have often thought of the poem beginning, "Breathes there a man with soul so dead," and thought it might be paraphrased to read, "Breathes there a woman with soul so dead, etc." I am pleased to be here, and I am becoming acquainted with some most excellent people whom I meet here from year to year. (Applause.)

The President: I am next going to call on Mr. Clark, whom we have not had with us for several years.

Mr. C. B. Clark: It is a great pleasure, friends, to be with you again. I was with you yesterday and today, but I have not been in a position to attend the meetings of the society for the past five or six years. Being a commercial traveler on the road, it seemed that I could not get around at the right time. I made a great effort to clear up my work during the first three days of this week that I might get back here to attend this meeting. I find in the last five or six years you have grown a great deal. It seems to me all these words that have been expressed in favor of the society are true. You have been making wonderful strides and great improvements, and I am reminded

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of what our friends from South Dakota said last night at the banquet—that we are "going some." He went on to say that we had been pushing railroads out through the Northwest, we had even got so far that the farmers had automobiles, but he didn't say anything about the flying machine. I was just wondering if he had been reading Mr. Dooley. Perhaps you never heard what Mr. Dooley said about the flying machine. He was talking with his friend, Hennessey, down here in Chicago, and he said, "Hinnissey, av ye had wan of these conthrivances made of schticks and gas poipe and some canvas, dhriven thru the air wid a gasoline injin? An' ye call that flyin', I wud niver look ye in the face agin." (Laughter.) Maybe our friend does not like to be classed with a flying machine.

Hennessey said, "Annyway, oi'd loike to come back here a hundert years from now an' see phat they be doin.'"

"Well," said Dooley, "av oi should come back here one hundert year from now, oi would find ye here shovelin' coal in a flyin' masheen fac'try at a dollar and sivinty-five cints a day, and oi would go acrost the strate an' go into me owld bis'nis again and sthart a saloon, an' oi would foornish ye wid a sayson tickut that wud make ye think ye were flyin'." (Laughter.)

I have enjoyed being here and I have enjoyed this meeting—and I think often of the old farm where I was born and raised.

A year ago my sister bought that old farm from my brother's widow, and we are going to fix it up and have a place for the Clark family to visit and have a good time. Anybody by that name will be welcome with all their friends. When I was down there last summer, my sister had some chickens, and she thought they were a pretty nice lot, and in the evening she told me she wanted me to get up early the next morning to hear those chickens crow. She said she thought it would be fun for me to be back on the farm and hear the chickens crow. In the morning there was a little fellow—and they had some nice little Plymouth Rock chickens—there was one little rooster who thought he could crow—he was just about as big as my fist, and he jumped up on a box and said, "E-he-he-h-e-e." Then there was another one a couple of weeks' older, and he thought he could crow, and so he strutted around a little and then walked up a wagon tongue, flapped his wings and said, "E-he-ah-h-e-e." Then there was the next one; he was going to do a little better, so he walked over across the yard where there was a great big Plymouth Rock, and he braced up alongside of that Plymouth Rock and flapped his wings a couple of times and said, "Er-hoo-oo-hoo-o." Then the old Plymouth became interested, and he wasn't going to let any of those little fellows get away with him, so he marched out in the middle of the barn floor and said, "Uh-hoo-hoo-erhoo-o." Then there was a big old Cochin China rooster, and he didn't pay much attention to the small fry until the old Plymouth Rock had crowed, and then he concluded it was time for him to save the reputation of the barnyard, so he walked out to the wood pile and deliberately climbed upon it, big and fat as he was. He gazed about him in a manner that indicated that he was about to make the greatest effort of his life and wanted everybody to

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witness it, and finally he flapped those ponderous wings of his and stretching out his neck, said, "Ooh-hu-o-o-o-h-ooo." (Laughter and applause.)

(The shorthand reporter, not being entirely familiar with *fowl* language, cannot guarantee that the foregoing is reproduced with absolute fidelity.)

The President: I see we have Senator Stockwell with us this afternoon, and I am going to call on him for a few remarks.

Hon. S. A. Stockwell: Mr. President, I do not know that I can say more than I have said on every other occasion, that I am greatly indebted to this society. There is one thing I have thought of during the meeting, and that is the matter to which Mr. Philips called the attention of the society, that the memorial fund to Peter Gideon is not as great as it ought to be. My thought has been that whatever we do our chief business should be to develop character, but it is not always done. I am strongly of the opinion that the best way to develop character in the long run is by precept and right example. It is of not very much use to teach a child the Ten Commandments and expect him to lead a moral life unless you live up to the Ten Commandments and set him an example of the moral life. So far as I know this society has not given to the childhood of this state its proper rights, in that it has not presented to the children of the state the work it has done, and now I want to suggest that another year in connection with this organization a committee on history be created which shall do something to keep alive the memory of the men who have done so much for this organization and for the state and country at large. I think we ought to have in every school the story of the Wealthy apple and its originator. I believe all the schools of the state ought to be interested in this society, and it seems to me in this way we can do the children a very great service. To my mind the service rendered by Peter Gideon to the state of Minnesota ought to entitle him to have named after him some school in St. Paul or Minneapolis. We often name schools after men whose names in my estimation do not serve to honor the school, but we cannot do a greater service to the school than to remember the people who have done so much for the state and for this society. I hope the executive board will take this matter up and see to it that the children of the state will know what these men have done, because the work these men have done is an incentive to others to do likewise. (Applause.)

The President: It is a very important suggestion, this thought of having the young people of the state inspired with the thought of how they can be beneficial to the community in which they live along these apparently ordinary lines but which produce very extraordinary results. I do not know just the best way to get at this matter unless it is by motion referred to the executive board. If there is no objection made I will take that as the sense of the meeting.

I am next going to call upon Mr. Boardman.

Hon. F. H. Boardman: Members of the Horticultural Society: There was a Salvation Army meeting down here on Washington avenue one night last fall, and there was a fellow came out of a saloon who staggered along the street because he was pretty drunk. He hap-

pened along to where they were holding their meeting and walked into the room. One of the good Salvation Army people spied him and showed him to a seat and started to talk with him. The man asked her, "What are you doing here?"

She replied, "Saving men."

"Well," he said, "don't you save women too?"

She replied, "Yes, we save women too."

"Well," he said, "save me one, will you?" (Laughter.)

Some years ago I stumbled into this society; I was not drunk and had not been fired out of a saloon, but you saved me. That is to say, you started me on the right track in horticulture. I commenced to learn, and I have now arrived at the point where I can tell a Wealthy apple from a ripe tomato; in fact, I know a little more than that, but what I do know along horticultural lines I owe to this society.

Not long ago I was down in New York, and I went into the wheat stock pit where I heard all the noise and excitement incident to trading, and I shook my head and said to myself, "What does all this mean? Here is a body of men gambling and striving solely for the possession of more gold"—and I could not help but think as I sat here this afternoon listening to these talks, what a contrast between that life and the life of the members of this society! Every active man in this organization is doing more for the home, more for the community, more than seven-eighths of the industries of the country, more than the millionaires of the world—and I want to congratulate you upon the work you are doing. (Applause.)

The President: We have a man here by the name of Green, an instructor in the Iowa Agricultural College. We have a number of Greens in the work; I don't know what attracts them, but there are three or four named Green. I am going to call on Mr. Green, who is the delegate from the Iowa Horticultural Society. He only came in yesterday afternoon, and we have not yet seen him. I regret we did not have him on the program.

Prof. L. Greene: Mr. President, and Members of the Society: The president mentioned the fact that my name is Green, the same as his. The question arose at one time as to why there were so many men by the name of Green in horticultural work, and one man said because that was the condition of the fruit at one time, and another man said the fruit was sometimes green but the men never were. I have had a great deal of pleasure in coming here and listening to the deliberations of your society. I wish we had a society like this in Iowa. I do not know how I can better pay you a compliment. Our society had probably something like seventy-five members at the Des Moines meeting. We ought to have a society fully as large as this. We have not quite as large a state, but we have better conditions for growing fruit in the southern part of our state, and we ought to have as many people in our society as you have in yours. I appreciate the reception I have had at this meeting, and I enjoyed the meeting very much, and if I cannot carry some good things back with me that will be a help to our society it is not because I have not heard them, but because I am not capable of doing so, because there has been a whole

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lot done and said here that would help us in our work in Iowa. I thank you. (Applause.)

The President: There are a number of others here whom I would be glad to call upon, but it is getting time to close the meeting, and I am just going to call upon two more, and then we will close. The first is Mr. Moore, of Spring Valley, who is with us every year, and whom we hope to see with us many years to come.

Mr. O. W. Moore: I simply wish to thank the society for the honor conferred upon me in making me an honorary member of this body. It is one of the greatest honors I have ever received or expect to receive, and I assure you it may be a source of pride to every one who is fortunate enough to be elected an honorary member of the Minnesota State Horticultural Society. It is very true I have done what I could for the state of Minnesota and this society for a number of years, but it cannot be expected that my years of usefulness will be much prolonged, for I am entering upon my eightieth year now, but just as long as my mental and physical abilities sustain me in this work, you as a society may expect me to be in the harness and ready at any time to perform such duties as I may be called upon to execute. (Applause.)

The President: Now I am going to have these delightfully closing exercises concluded by a talk from Mr. Elliot, the only surviving charter member of this society, after which Mr. Jayne will give us a closing song.

Mr. Wyman Elliot: Mr. President and Fellow Members: It is said that the first shall be last. I was one of the first men to organize this society, and all through these years it has afforded me the greatest pleasure to assist in carrying on this work. I have served in a number of capacities, as treasurer, chairman of the executive board and as president. I do not know of anything I have done in my life that has given me greater pleasure and satisfaction than to be associated with you and help to do the work you are doing. I hope that every member and every one who has been here this year will take home with him something that may add to the interest of horticulture. I commenced planting apple trees in Minnesota in the spring of 1856, and from that time to the present I have been doing more or less of that kind of work. A few years ago I took up the idea of seedlings, the study of seedlings, and I do not think there is a man in the whole audience who has grown as many seedlings as I have. When I compare the efforts that were made in the early days with the efforts being made today, it shows certainly a wonderful advance. I hope when you go home you will all of you take some of the apples that have been distributed and see that the seeds are placed properly in the ground and then watch them with care. We have down below several boxes of apples that have become the property of the society. We are making arrangements to have the seed of these fruits taken out and given a wide distribution throughout our state, and I do not know of anything that can be done to a better purpose. I do not know that I have anything further to say, except that it has given me the greatest pleasure to meet so many old friends again, and as I ran my eye

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over the tables in the fruit room below and saw so many gray heads bending over them, all earnest talkers and faithful workers, I could realize in a measure how this wonderful development in our horticulture has come about, because they come here year after year to gather inspiration which they carry home with them and put into their work—and I myself have learned a great many lessons I did not know when I came here. I thank you. (Applause.)

Mr. Trafford Jayne then favored the audience with a beautiful closing song.

President Sam'l B. Green: This brings our delightful gathering to a close, and I believe we shall all go home feeling that we are better for having been here, and take up our life work in a stronger and better way.

An Interesting Experiment in Orchard Culture.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

The Ohio Experiment Station has recently published a very interesting bulletin on the subject of different methods of orchard culture. The object of the experiments which are given is to show the comparative value of different methods of cultivation. It includes cultivation in the following ways:

No. 1. With cover crop.
No. 2. Clean culture.
No. 3. Sod culture.
No. 4. Sod mulch.
The experiment has been running six years.

The cover crop method is said to be safe, practical and excellent while the orchard is young and where the ground is level or nearly so, or on steep hillsides where the soil does not wash readily by flooding rains. For this method of culture, mammoth, crimson and medium red clover, also winter vetch and cow peas do well. Soy beans do well even in northern Ohio and are generally conceded to be superior to cow peas for a cover crop. A combination of oats and Canada field peas also makes a good winter covering for the soil. It is customary to sow the cow peas and soy beans in drills two feet apart at the rate of three-fourths to one bushel per acre; the young plants are then cultivated once or twice to give them a vigorous start. A mixture of rye and vetch is sometimes sown broadcast among the cow peas and soy beans just after the last cultivation in autumn. This combination affords a dense carpeting during the winter and makes an early heavy growth the following spring by the time the ground should be plowed again. The trees in this plot made a satisfactory growth.

The clean culture plot had a hard time of it, as the soil washed

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badly, and it was necessary to seed it down after four seasons' trial, as many tons of soil had been swept away by the rains, and the roots of the trees were exposed in many places.

Under the sod culture method the trees were planted out in generous holes directly in the sod, and the area of ground for three or four feet in diameter about each tree was spaded, and these spaces have annually been kept clean and mellow. The grass in this orchard was cut and allowed to lie where it fell. No fertility was added to the space about the trees, which space was enlarged as the trees grew to correspond to a diameter equal to the head of the trees. In this plot the trees made only a fairly good growth. It is a most expensive and laborious way of growing orchard trees but may be used to good advantage upon very rough or stony areas where mulching material is not available.

Under the sod mulch method the trees were planted in the sod, much as in the sod culture method. The stems of the trees were enclosed with fine-meshed wire-screen cylinders, to prevent injury by mice or other rodents. The grass was also mowed three or four times each year, but instead of allowing it to lie where it fell, as under the sod culture method, it was raked up and used to maintain the mulch about the trees. The results in this orchard were very satisfactory—in fact, it gave the best results of all methods of cultivation tried, and the trees made an extremely satisfactory growth. It was thought that there might be more danger of injury from borers and other insects owing to the mulch about the trees affording them good protection, but this did not seem to be the case, and no more injury was noticed in this plot from insects than in those that were not mulched.

It has been frequently claimed that under the sod culture method the tendency was for apple trees to produce their roots near the surface of the ground, but it was found in these experiments that the root systems of the apple trees grown under the different methods of culture were at a surprisingly uniform depth, the greater portion of the roots, both large and small, having remained in the upper six inches of soil. The fibrous, or feeding, root system of a tree under annual plowing and clean culture with cover-crops practically renews itself annually, pushing up thousands of fibrous rootlets to the very surface of the soil. Apparently few of these rootlets go into the lower, more compact, colder soil. The partial or even total destruction of these surface-feeding roots, which occurs during the hotter and drier months of summer and during the cold months of winter, does not cause the tree to suffer in the least, and there was found to be an immense net work of rootlets occupying not only the upper two inches of soil. but also the four inches below. The conclusions from this fact are, that there can be little danger in changing from a heavy mulching to a clean culture or cover crop plan.

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HORTICULTURAL HALL, MINNESOTA STATE FAIR, 1910.
A VIEW TAKEN FROM THE CENTER ACROSS THE FOUNTAIN TO THE NORTHWESTERN CORNER OF THE HALL.

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THE MINNESOTA HORTICULTURIST

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Horticulture at the Minnesota State Fair, 1910.

A. W. LATHAM, SUPT. HORT. DEPT.

Those who visited horticultural hall at the recent Minnesota State Fair and who had seen it on previous years noted with pleasure the marked change in its appearance. The large centerpiece, which in its varying changes had attracted so much attention in previous years was entirely removed, and a beautiful flowing fountain had taken its place. This fountain, while it was appropriately ornamented with vases of flowers around the margin and a pile of statuary in the center, yet as a whole was low and did not interfere with the general view of the hall. The booths which had heretofore occupied the south half of the hall were all removed, and nothing of any elevation to interfere with the view of the whole hall was to be found at any point. As a visitor entered at any one of the doors the whole interior of the building could be seen at once, all of the exhibits of a height to interfere with this having been placed against the outside walls. The hall was profusely decorated throughout, posts, cross beams, walls, doors, etc., with evergreen boughs and trailing evergreen rope, in striking contrast with the uniform white of the interior of the building, the whole making a beautiful effect as viewed from any point in the hall.

The south half of the hall was devoted entirely to the floral display, the florists having supplied a sufficient number of palms and other decorative plants to arrange about the walls all around the inside of that end of the hall. Four florists contributed to this magnificent display of decorative plants, Holm & Olson and A. S. Swanson, of St. Paul; the Minneapolis Floral Company and John Vasatka, of Minneapolis. Arranged at suitable points throughout the interior of that part of the hall were placed many beautiful single decorative plants, the most conspicuous being a number of large bay trees located on either side of the center aisle, giving much the appearance of a grove. The Minneapolis Park Board, through Theo. Wirth as superintendent, contributed also a large number of smaller bay trees, which were placed about the hall against the various posts, a table of unusual

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decorative plants, grasses, etc., and also a table of splendid cut roses from the Minneapolis park gardens.

Besides the florists above mentioned there were a number of others who participated in other features of the week, in displaying decorative plants and flowers, blooming plants, etc. A most interesting feature of the florist display was the baskets of cut flowers, which were shown on Tuesday. There were five exhibits in this class. In the class of table decorations there were four exhibits, all of which were very beautiful and added much to the interest of the day. On Friday there were four floral designs displayed, a wreath on an easel. All of this special decorative work by the florists was greatly appreciated. In the judgment of the writer this feature of the fair should be enlarged, and note made in the program published by the state fair association of the days on which these various decorative exhibits are to be shown.

The amateur flower premium list had been very much enlarged and increased for this year's purposes, but on account of the very dry season the amateur display was a comparatively small one. Considerable excellent material, however, was shown, enough to keep the tables fairly well filled during the week. The amateurs set up half a dozen collections of wild flowers and eleven bouquets of wild flowers, all of which were of interest and would have been much more so if, following the suggestion of the assistant superintendent in this department—Mr. Gust Malmquist, of Minneapolis—the different varieties of flowers had been labeled. The amateurs displayed on Thursday eight baskets of flowers, which were very prettily designed and well worth to the fair the amount of the premiums awarded, and on Friday seven table decorations, some of which competed very closely with the character of work done by the professionals. This part of the floral display had been worked up largely by Mr. Malmquist, and in its inception and management was a credit to him.

The fruit display, while it covered the tables as fully as any previous year yet on account of the dry weather and the fact that most of the exhibitors had practically no fruit at all, was scarcely up to the average standard of the fruit department of the fair. There were nine pecks of apples shown, three collections of fifteen varieties each, and four of ten varieties each, all these collections being most excellent. In the professional department there were only two exhibitors of collections of apples, and this was also the case with the amateur collections of apples. A number of others, however, participated in the display of single plates, so that there was in the aggregate a goodly

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number of this class of exhibits. There were five collections of crabs shown, and a proportionate number of single plates.

The seedling exhibit was an especially light one, though T. E. Perkins, of Red Wing, came to the front in great shape with ninety-one varieties, which were very handsomely placed and made a beautiful show. Mr. A. B. Lyman followed with thirty-two varieties, and J. A. Howard with eleven. There were in all only forty-four single entries of seedling apples shown, an unusually small number.

The plum exhibit was very light indeed, three collections, aggregating thirty-five plates, along with twenty-seven single plates, being all that were shown.

The grape exhibit was unusually good, the lateness of the season permitting their ripening, and the fact that grapes as usually grown do not suffer much from dry weather made it possible to bring this exhibit up to a point considerably above the average. There were five collections and something less than one hundred single plates.

The State Fruit-Breeding Farm made a notable display, mainly of grapes that were seedlings of the Beta now fruiting for the first time. There were 230 of these shown. Besides these there were nine varieties of apples and other fruits from the greenhouse containing seeds crossed with other sorts, as follows: two nectarines, eight peaches and one pear.

A summary of the total display of fruits in the hall showed 3,777 plates. A considerable proportion of this display necessarily was not of a competitive character, and the fact that the hall came up in its totals to a maximum display of fruit was to be credited to the willingness of the exhibitors to contribute to this purpose to keep up the reputation of the state exhibit.

There were a number of interesting exhibits arranged around the outer edges of the hall. The Jewell Nursery occupied the space near the east door, the State Experiment Station occupied the space from the north door to the northeast corner, including in this exhibit the forestry department, the entomological department and a demonstration in spraying. This feature of the building attracted much attention, and we hope it will be repeated with such changes and improvements as may be suggested another year.

The mushroom exhibit as usual had a crowd about it. This was against the north wall west of the north door. Alongside this exhibit was one by the Audubon Society showing stuffed birds in an interesting display. There was always some one at hand to talk to

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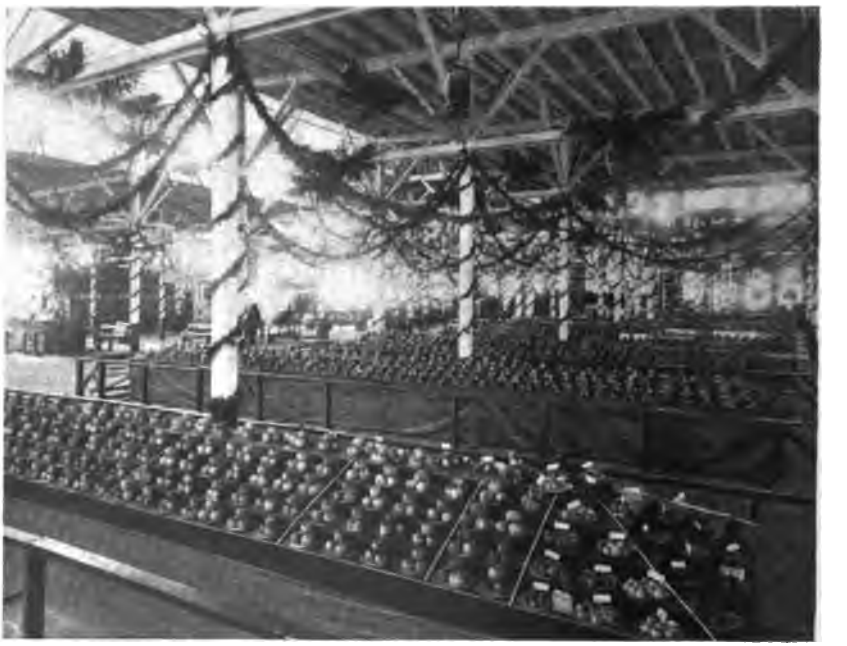
passers-by as to the advisability of protecting and caring for our bird friends.

At another point along the wall was a display of wild flowers from the Minneapolis parks, in charge of Miss Butler, one of the botany teachers of the city, and near by on the same side some commercial exhibits by B. T. Hoyt, Hiawatha Gardens and Northrup, King & Co.

The Lake City orchestra gave us beautiful music throughout the day for the six days of the fair. There was plenty of seats in the hall and no objectionable features, nothing to interfere with the



Apple exhibit at State Fair, 1910.

comfort and enjoyment of the visitors, Horticultural hall was indeed an interesting place to visit and especially restful. Under the general management of Mr. Thos. Redpath, ably assisted by Mr. Cowles, who had charge of the south half, the hall was always kept spick and span. Much credit is due to the assistants for the satisfactory results attained in keeping the hall in so nice a condition. Aside from the peculiarities of the season, which interfered somewhat with the extent and character of the display, the first year's occupancy of the entire hall for horticulture must be considered a satisfactory one, and judging from

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the expressions of those who visited the hall this was the general verdict.

The judging was done by local talent altogether. There were many visitors in the hall from a distance who were interested in horticulture, some of whom the writer met, including Wesley Greene, secretary of the Iowa Horticultural Society; Vincent Reeves, member of the executive board of that society; Mr. L. A. Clemons, of Storm Lake, Ia.; our well-known, highly esteemed friend, Chas. G. Patten, of Charles City, Ia.; Geo. J. Kellogg, of Lake Mills, Wis., that veteran of horticulture, well-known to us as a regular attendant at our annual meetings; Prof. Macoun, of Canada; Mr. Aug. Krueger, of Groton, S. D., who was with us at our last annual meeting, and others whose names are not at this moment recalled.

The premium list published herewith—or if too late for this issue in the November number—will show that those who were able to exhibit were very well rewarded for their trouble.

The Value of Flower Exhibitions.

AUGUST S. SWANSON, FLORIST, ST. PAUL.

Perhaps it is rather an imposition on my part to attempt to give any advice or instruction upon the subject "The Value of Flower Exhibitions," as this society must be given full credit for its efforts in the exhibition line. Well do I remember when I received through the mail a notice and premium list of the flower exhibition of the Minnesota State Rose Society, of the existence of which I had no inkling, and I must say in spite of slight encouragement you have persisted in making your annual exhibits and making them a success. I hope you will not tire in your efforts but persist in the good work, and some day you will feel amply rewarded by your endeavors in doing good to others, because that is what I consider such self-sacrificing work as your president, Mrs. Ruff, and others of the officers of this rose society, have been doing.

Many perhaps are unable to see any particular value in flower shows or exhibitions; still it is there and will, I hope, appear to you all before I get through with this short paper, in the eight minutes allowed me.

Now, first, in a commercial way: Flower exhibitions are as valuable and necessary to the man who is making a business of growing and producing flowers for a living as is the exhibition of stock or any other merchandise, such as cattle or automobiles, for instance, and to

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my personal knowledge those in the business who have been liberal exhibitors have always reaped a great benefit from it. I could mention hundreds of such examples but will confine myself to only one. There is Chicago, the wonderful city, which, great in many things, is rapidly approaching if it has not already arrived at the point where it may claim to be the greatest market for flowers in this country. A firm of brothers, well known to all connected with the flower business, who started in Chicago about fifteen years ago, with little or no capital, today enjoy the enviable reputation of being at the very top, having in every way outdistanced all of their competitors, many of whom had a great start before this firm existed. I myself, believe their great success may be traced to the exhibition hall; from the very beginning of their business they have been anxious to exhibit their stock, always having something to attract attention and bring their name before the buyers. Now it stands to reason any one who makes it his business to enter his flowers in a public competition for awards will do his utmost to bring his products up to the highest standard of perfection, as by doing so he benefits himself indirectly by constant effort to improve his products, and thus he gains a reputation for goods that will always be in demand and bring the top price in the market.

So much for the value of flower exhibitions in a commercial sense. But I much prefer to look at their value in a different light, the influence it has for good upon the mind of the average man and woman. It is, I think, an acknowledged fact that no occupation of any sort, no exercise of any kind, no sport of any variety, has as healthful an influence upon the mind and body as the old, old pursuit of gardening, especially so when carried on as a hobby or recreation. Now this being an acknowledged fact, should we not feel inclined to in every way encourage such a desire and pleasing occupation? This can most readily be done by encouraging exhibitions of the products of the garden, among which the flowers occupy a conspicuous place. By encouraging the exhibitions you will find you not only encourage those who already are engaged in gardening and growing flowers, but you will induce others to join your ranks and become flower lovers—and I have not yet met a genuine flower lover who was not willing to use his best means to endeavor to get others to become martyrs for a good cause. In England they have the Royal Horticultural Society, which is holding bi-weekly flower exhibitions in London the year round, and it is acknowledged by those familiar with the conditions over there that these exhibitions have done

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more to make a garden of England, which it is today, than all other things put together. Yes, I have heard enthusiasts claim they were to be credited for 95% of the flower lovers over there.

But this is not all the good the flower exhibitions accomplish; they have a lasting influence for good even on the casual visitor, more so I think than a visit to a cattle, hog or even horse show. I remember once reading of a wealthy brewer, if I am not mistaken, who in making a donation of $100,000 to the before mentioned Horticultural Society of England, stated that he was more than willing to help the society, as the greatest pleasure of his life was the visits to their flower exhibitions. Now when a wealthy and independent business man can express himself in such language about his impressions of flower

A glimpse of the floral exhibit at 1910 Minnesota State Fair.

exhibits, there is no doubt but thousands of others would feel much the same way could they have the chance to occasionally view an exhibit of the wonderfully gorgeous and beautiful things nature will produce when properly assisted.

I am bold enough to make the assertion that there are very few things which will make the average person, child or grown up man or woman love their home and, through their home, their surroundings and their country, more than flowers. They exert a mysterious and healthful influence upon the mind. Therefore, let us in every way encourage and bring to life the slumbering love for flowers, which I claim may be found in every human being, and in no other way can we better or easier accomplish this than by encouraging flower exhibitions everywhere, but at present I think the place they would do most good, be

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of most value, is at our annual state fair. And I wish to urge you all to use your utmost efforts to bring about a revolution in existing conditions at that place so as to make the flower exhibit worthy of its name, place it at least on an equal with other exhibits at this great fair, and I have not the least doubt but that it would attract as much attention and perhaps do more good, its benefits be more lasting than most other exhibits. But to accomplish this exhibitors must be given more encouragement in the way of proper facilities for displaying their goods, and some attractive premiums must be offered so as to induce competition, because it is through competition, and that alone, a display that may be worthy of the name flower exhibition ever will be accomplished. And I believe when the day arrives, as I hope it will, when more people will be attracted to the state fair because of the flower display than by what is going on at the race track—I say when that day arrives you will have cause for congratulating yourself because this state is your home, and you will feel proud of the fact that you helped to bring about these conditions. That I do not stand entirely alone in the belief of the beneficial influence of flower exhibitions, is shown by the following extract from an editorial in the Chicago Tribune, which, as is well known, is one of the most influential of our conservative daily papers:

Editorializing on the closing day of the flower show, the Chicago Tribune had this to say:

"The Flower Show, which has reached a successful end, has come to mean more than an exhibition of beautiful plants. To its æsthetic and artistic value it is adding, more and more every year, a practical and utilitarian worth. It would be impossible to weigh exactly the increased incentive towards home beautification which hundreds of Chicagoans find in each exhibition, but one seeing the crowds at the show and observing the interest which they take in the displays is conscious that a tremendous influence is exerted.

"When Chicago finally succeeds in its now painful search for rounded and complete municipal beauty it will be because each individual has contributed according to his ability and his opportunity, and these flower exhibitions are doing much to discover the individual ability and the individual opportunity. The Horticultural Society is striving consciously to bring this about, and not the less effectively because of the element of personal interest which enters into the efforts of flower sellers to create flower lovers."

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The Little and Big Mountains of Montana.

DEAN W. MARTIN, MINNESOTA FOREST SCHOOL, ST. ANTHONY PARK.

The past summer I spent with the Forest Service in the Little and Big Mountains in Montana. These comprise practically all the mountains east of Helena and Great Falls and north of the Northern Pacific Railroad, covering an area of 3,000 square miles, which is five times as large as Hennepin county. The situation of these mountains makes them very important. They are in the midst of the best grazing country in Montana, and the stockmen rely on them for the most of the summer range, as the greater portion of the mountains, especially in the Little Belt range, are very accessible and have a luxuriant growth of grass.

The ranges themselves are comprised for the most part of high rounded hills reaching about 7,000 feet elevation, but an occasional park may extend up to 9,000 or 9,500 feet. The formation is practically all limestone, which outcrops everywhere, some extending in long, sloping lines for five miles at a time. The higher peaks, however, are usually comprised of sandstone or quartzite which has broken up into small pieces and forms immense long slides reaching down the slopes. In a few of the rougher and more picturesque places there are large limestone cliffs from 1,000 to 2,000 feet high, brightly colored with yellow and green, and some of them shaped like huge castles.

The surface of the slopes in some places is covered with a dense growth of conifers, in others the forest has been burnt off, presenting a very ragged appearance, while some are completely bare save for a growth of brown grass. From a distance the general color is a dark blue green.

All these mountains are in the National Forest, which includes many sections of the railroad land grant. The government, in connection with the railroad, is trying to ascertain the value of these sections, so that some deal can be made giving the government title to the land again, and in this way have the National Forest continuous instead of every other section being owned by the railroad. In order to get a valuation of such a large area the land is divided into classes. Thus the first division is into timber land and non-timber land. The timber land is then divided into: 1—Merchantable timber. 2—Pole stand. 3—Reproduction. All merchantable timber must be estimated to find its value.

The non-timber land falls into many classes, each of which has a different value, so that the area of each class must be determined

They are: 1—Grass land. 2—Agricultural land. 3—Brush land. 4—Burnt out land, which is divided into: (a) Land good for grazing. (b) Bare, with no grass or reproduction. (c) Re-stocking with young growth. 5—Sagebrush growth. 6—Waste or barren land.

All of these nine different types are scattered in very irregular tracts throughout all the reserves, and their area has to be fairly accurately ascertained in getting the value of the land.

The method used in estimating the timber and determining the area and position of these tracts is the strip method. The party consists of four men, compassman, tallyman and two calipermen. The compassman runs the line, paces the distance and maps in the different types just enumerated. The calipermen measure the diameter of all trees above ten inches and call them to the tallyman who records them on the tally sheet. The lines are run a half mile apart and all trees to a distance of thirty-three feet on each side are calipered. The compassman, with the aid of his compass, maps in the types to a distance of a quarter of a mile on each side of the line, so that when all the areas have been obtained they can be plotted together. Thus a complete type map of the country is obtained, from which the total amounts of the different types are computed and a value set.

In addition to recording the diameter of the trees, the tallyman has to collect some data on the character of the land and forest, the principal items of which are: 1—The kind of soil. 2—The slope. 3—The ground cover. 4—The reproduction, number of seedlings. 5—Damage to timber, if any. 6—Sylvical condition. 7—The merchantable condition which is classed as: a—Timber to be cut in ten years. b—Timber to be cut in twenty-five years. c—Timber to be cut in over twenty-five years.

The party, as I said before, consists of four men if the country is heavily wooded, but if the timber is thin and scattered two men are sufficient and can easily do the work of four men. An average day's work in the wooded country is between three and four miles, while in more open country eight miles is the work of a day.

The timber of this region may be divided into two distinct groups: those species inhabiting the mountain ranges above an elevation of 7,500 feet and those below this elevation. The class of trees above 7,500 feet are called Alpine and include the balsam fir, the white bark pine, the timber pine and occasionally an Englemann spruce. These are all found in mixture on any soil that will support a forest growth, but none of them attain sufficient size to be of any value commercially.

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In the lower situations are found three species of great importance and wide distribution. Arranged in the order of importance they are: the Douglas spruce, or red fir; the western yellow pine, or bull pine; and the lodgepole pine, or more commonly called white pine by the natives. These species do not usually occur in mixture but in dense pure stands. The Douglas spruce prefers the moisture of the slopes. The lodgepole grows well on any exposure but particularly on east and west slopes, while the western yellow pine grows only on the dry, warm south exposures and even encroaches on the dry foothills and plains. This tree can also be found on the rocky sandstone slides, where one would think no tree would be able to exist.

These three species in the natural course of nature would adapt themselves to the conditions best suited and so cover the entire mountain slopes, but fire has been through this country so continuously that only a few patches of virgin timber are left. All the trees reproduce abundantly and thus secure a good natural reproduction; so in time the area may become re-seeded if the fires are kept out.

The National Forests cover an immense area of the west and play a very important part in all economic and business affairs of that region. So it might be well to give some of the most prominent effects. These can be divided into effects on the country and the effects on the people. The most general and striking have been:

1—To cut only mature timber and according to scientific methods, thus giving a chance for the reproduction.

2—To reduce the number of forest fires.

3—To limit the amount of grazing and thus improve the quality of the forage.

In former years the range was greatly overstocked, and this resulted in an impoverished condition of all vegetation. There was such competition that the stock was driven on as soon as the snow melted, which did not give the young plants a chance to start and consequently the growth was poor. Now stock is kept off until the first of July, and the range is never overstocked, which has resulted in a marked increase in feed.

This last measure is the one that bears directly on the people and has caused a great deal of hard feeilng. Before the creation of the reserves the settlers had the unrestricted use of all government land, but now the grazing is limited, placed under supervision, and all such grazing rights must be paid for. The result has been just what would be expected where privileged and established customs have been curtailed; the people feel that the land has been stolen

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from them, and they are consequently "sore" at the offenders, the Forest Service. Some who have thought about it reason their attitude in this manner, as one ranchman said to me: "The pioneers of a region should have the use of the natural resources in return for settling the land. Our forefathers who settled the east had free and uncontrolled use of the land, and no one has ever raised a thought of opposition; but, when the people of the east hear that we, the settlers of this western region, have the free use of some sections of government land they call us all kinds of hard names. Why are we different from our forefathers?" Still others say that it is a waste of land to let it grow up to timber when it could be used for pasture and thus support more people and help settle the region, while many dislike the personnel of the Service or the way the supervision is done—but these are rather minor causes.

One of the most prominent effects of this restriction of grazing has been to drive the large owners out of business. This arises from the fact that nearly all large outfits rely entirely on getting summer range in the mountains and so have had to reduce their holdings with the restrictions on grazing. The large owners are usually the most wealthy and prominent ranchmen, and it is they who have caused much of the opposition to the National Forests.

The people who "kick" often make the loudest noise, and we are apt to think they have the greater numbers, but the fact is that the majority of the ranchmen favor the National Forests, and I think the principal reasons are:

1—That the small ranch has more chance to compete with the large holder.

2—That the improvement to the range and the consequent improvement of his stock more than compensate for the fee that is paid for the grazing privilege.

3—And, most important and universally acknowledged by all ranchers, is that the forested slopes act as a reserve to hold water. Now in spite of all the talk about dry farming the Montana rancher must have water to raise his hay and alfalfa, and he must have hay and alfalfa to winter his stock. So everything that diminishes the water supply lessens materially the value of his ranch and his product. That this fact is realized by the western people is shown by the petitions that have been sent to congress asking for the establishment of new reserves in certain ranges where there was danger of deforestation.

When the people begin to look ahead to future benefits they also begin to think of other advantages of the National Forests, and

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in this way their enmity is lessened. So, I think, in a few years there will be a complete harmony between the ranchmen and the Forest Service.

Mr. S. P. Crosby: Do cut-over lands have a substantial growth of trees?

Mr. Leavitt: Yes, in the Superior National Forest you can find thousands of acres, some that have been cut-over and some burned over, that are springing up with Norway pine, also some with jack pine, and I believe they will furnish a foundation for the growth of more desirable species.

Mr. Crosby: Does pine grow again?

Mr. Leavitt: You will find in the Superior National Forest a peculiar condition. You will find a large stand of timber, white pine, Norway pine, jack pine, poplar, birch, and a species of both black and white spruce.

Mr. Crosby: I have been told about this section that the growth is very slow and does not amount to much. In the state of Maine it grows quite rapidly after the land is cut over, and people tell me they can remember when it was cut over, and now they are cutting it again for lumber.

Mr. Leavitt: In Massachusetts it is interesting to note that in 1908 they were cutting second growth timber, white pine, which had been cut over thirty-six years ago. The growth in this state is not nearly so rapid.

Mr. Crosby: In the state of Maine a law has been passed regarding the cutting of forests, and it requires a thorough cleaning up after cutting. I think that is a very wise law.

Capt. Reed: What laws do we have requiring lumbermen to clean up?

Mr. Leavitt: We have a most excellent law, and we also have a law providing that in the national forests only those trees that are marked by an officer of the forest service are allowed to be cut. We blaze them and stamp them with the United States marks and those trees may be cut, and it is a part of the cutting regulations to take care of the refuse, and we require those cutting the tree to burn it. The state brush burning laws are just as good as the United States brush burning laws. I will state that not only as a matter of interest for the protection of the interests of the state, but for the protection of our own good up there, the forest officers are going to see that the state law is enforced in the Superior National Forest, and the authorities insist that the cuttings from private lands and also from forest lands be disposed of while the cutting is going on.

Capt. Reed: I presume the lumberman has the right to cut any tree provided he clears up the underbrush?

Mr. Leavitt: The last legislature passed a law requiring any one who cuts timber to burn the slashings.

Prof. Green: That law was passed somewhat at the solicitation of lumbermen in this state, who were afraid of danger to their holdings by fire.

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Capt. Reed: What is the expense to the lumbermen of burning those slashings?

Mr. Leavitt: They can do it at an expense as low as 18c to 25c, and from 25c to 40c, and in some cases 50c a thousand feet, which adds that much to the expense of lumber. When you consider that something like $500,000,000 of forest wealth of this country has been contributed to the fire fiend, you will see that the added expense to lumber for the protection of forest wealth is a very small item. (Applause.)

About Packing Apples.

PROF. WM. ROBERTSON, PRINCIPAL CROOKSTON AGRI. SCHOOL,

Now a word in regard to packing: This matter has been brought up here in the horticultural society for a number of years. The discussion on the question of the use of boxes has been brought up a number of times. We have coming into the district a great *many* apples—apples which we buy; but the largest share of them come from the West. Two weeks ago, about Thanksgiving time, when we *wanted* apples the worst way, we could not find any in Crookston. The day I left box apples were selling at the rate of $2.65 a bushel. What is the matter with Minnesota apples? This home orchard we have been talking about I believe is the worse curse in the state. I got full of that myself. I thought I would set out a home orchard, which I did, and in a few years I had a lot of apples the hogs would not eat. I threw them over the fence, all they wanted, and they did not care much for them at that. I know the people in the northwestern part of the state wanted apples and could not get them. I believe the barrel is the curse of Minnesota. I tried one fall when I came up here to get some commission merchant to handle these box apples; they said there was no demand for anything but the Wealthy, and they would not have anything excepting barrels. When they told me they would not take them in boxes, I packed twenty-five bushels myself and brought them up here, and they were all sold out before I could even have taken them to a commission house if I had wanted to do so. When you learn how to pack your apples and when you pack them in boxes, you will *not* have to take 65 cents a bushel for them. I would like to see this box business taken hold of in Minnesota. You will find a good market *in* Crookston, Grand Forks, and in other towns in the Northwest if you will pack your apples and ship them in that way. If you pack them in boxes and pack them the proper way, you can get $2.65 a bushel easier than they could get that for those shipped from the West. Re-

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member, that we like good apples just as well as we did before we moved from the southern part of the state.

I have been preaching this matter a great many times to the commission merchants. The apples grown in Minnesota have a better quality than any apples that are grown in the West, and there is no reason on earth why they should not bring as good a price. However, I think the experience we are going through is good for us. We have been planting everything that would grow and a great many that would not grow. We have Longfield, Okabena, Duchess, Northwestern Greening, Patten's Greening, Wealthy and some others that are all good apples, but we have not enough of one kind to make a carload. But if we go into the box business, we can find a market for them. If I had set my orchard to Wealthy and Patten's Greenings, I could have sold the apples by the carload. I think one thing this horticultural society should do now that we know apples can be grown in Minnesota —and as choice apples as can be grown anywhere in the United States—is to pay especial attention to the packing and marketing of the fruit instead of trying to sell it indiscriminately in improper packages. (Applause.)

GARDEN CULTURE OF TOMATOES.—In garden culture and in the greenhouse tomatoes are usually trained to stakes or wires. In outdoor culture the Michigan experiment station found a pair of wires fastened to each edge of a 6-inch fence board a very serviceable form of trellis for tomatoes. When tomatoes are trained to stakes, one stake 6 feet high is used for each vine and the vine pruned to one to three stems. Pruning to a single stem is generally recommended. This tends to increase the size of the individual fruits and the earliness of the crop.

BEE-KEEPING A SIDE ISSUE.—Aside from the honey they make, there are many reasons why I think every farmer should keep bees. In the pollenization of many plants and fruits, they do a work so useful, and so necessary, that in many cases we may safely say no bees, no fruit. I would keep bees on this account alone, if they never made a drop of honey. They are cheerful, hopeful and industrious. They keep their homes neat, clean and sanitary, and spend no time scolding, sulking, gossiping or loafing. What a worthy and powerful incentive their example should be to each and all of us. So the farmer can well afford to keep bees for the example they set. He can afford to keep them for the pleasure, the fascination and the knowledge that an intimate study of their lives and habits will give him. The amount of pleasure varies somewhat, and so does the quantity of honey. Ordinarily, bees, like domestic animals, are profitable in proportion to the intelligent care given them, but the care required by bees is very much less for a given return.

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Five Acres Enough.

P. H. PETERSON, GARDENER, ATWATER.

In preparing this paper I have had in mind the amount of work that could be had on five acres. We have only four, and it keeps me busy most of the time.

Having only a small piece of ground and wishing to grow apples I thought of the time it would take before those trees would come into bearing, so my plan was to make use of the ground between the trees as much as possible. My orchard was started by planting the trees sixteen feet apart in the row, and the spaces between the rows vary from twenty to thirty-five feet. In these spaces we grow our straw-

P. H. Peterson's gardens, at Atwater.

berries, potatoes, tomatoes, etc. In the rows with the trees we plant gooseberries, currants, black caps and red rasberries, and also the strawberry propagating beds. Gooseberries seem to do exceedingly well when thus planted. Those we had in bearing this last season averaged ten and one-half quarts per bush, some yielding as high as sixteen and seventeen quarts. Raspberries seem to be a benefit rather than a detriment to the trees, the leaves falling and lodging amongst the canes. They will also hold some snow, and will help to protect the roots of the trees during the winter. The trees stand in the center of a dish or basin four feet in diameter. When the shoots appear within this basin they are treated the same as weeds.

If I should plant another apple orchard I would put the trees twenty-four feet apart in the row and plant a Compass cherry between

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each. That would make the trees twelve feet apart. This would give ample room for the apple trees to develop, and later on when the trees commence to crowd the cherries could be cut out. The Compass cherry has a reputation of not bearing satisfactorily as a mature tree. I believe this can be remedied to some extent by the heading back process. You will notice that it gradually loses its fruiting spurs on the main limbs, which become smooth and consequently the growth is thrown out into the tips of the branches, which makes them long and slender. These are apt to break down from becoming top-heavy. By shortening back these limbs some every year we encourage new growth closer to the main tree, and on this new wood is where we get the most and finest fruit.

Strawberry picking at P. H. Peterson's place, Atwater, Minn.

Of plums we had a good crop of fine fruit, which I am satisfied was due to spraying, as we never had a good crop before, nor did we spray until last spring, having only a few trees—and, by the way, I was just about to cut them out, as it did seem as if the only crop we were able to raise was plum-pockets. Last spring we gave the trees three sprayings with Bordeaux mixture and arsenite of soda. The first was given when the buds were opening with the 4-4-50 formula, the second a few days before the blossoms opened, and the third just after they had fallen. These last two sprayings were made with the 3-3-50 formula. The result was that the only plums I saw anywhere were on those sprayed trees.

I want to say in this connection that we had some apple trees that were badly affected with the buffalo tree hopper. Last spring we gave

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these trees a good drenching with the stronger of the above mentioned solutions with the result that there are no new punctures while in another plot of one hundred and fifty trees of more recent planting that were not sprayed the new punctures are very numerous. Apples we had none except a few specimens, trees being too young to bear.

I am very much interested in top-working, having over one hundred trees grafted in this way, using from five to twenty scions, according to size and shape of tree. Sometime in the future I shall probably be able to report on the behavior of these trees. In an exposed location, as we have, I find it is not an easy matter to train the apple trees to proper shape. Our aim is to grow the heaviest portion of the top on the south side so as to shade the trunk as soon as possible. Even when trees are planted in a slanting position they will be forced

P. H. Peterson's flower nursery, at Atwater.

over to the northeast by the prevailing southwest winds in the growing season. We keep a close watch on our young trees by pruning, and if it cannot be accomplished in this way limbs are tied down and staked. Generally they can be established in one season's growth.

I believe that five acres judiciously planted and well cared for can be made to give good returns. This year we kept an account of all items sold off from three and one-half acres. Out of this the strawberries occupied three-fourths of an acre, and with the berries and plants brought us $310.45; all other items amounted to $170.00, or $480.45 for everything actually sold. What was used by the family is estimated at $100.00, making a total of $580.45. We have a good home market for fruit, but this is not the case with vegetables. Fruit is what we want to grow, and we are going to grow it too, although we do not own a hundred acres.

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Herbaceous Plants for Minnesota.

ERNEST MEYER, FLORIST, MINNEAPOLIS CITY PARKS.

The following varieties are only a few of the herbaceous plants which are hardy in Minnesota, and I am to mention only such kinds as are real showy, of clean habit, and combine with these virtues a fair degree of hardiness.

One of the best, and what I would call the "Queen of Herbaceous Plants", is the peony, with its gorgeous colors, enormous blooms, clean habit and perfect hardiness. It adapts itself to the hardy border for fore-planting in shrubbery beds as well as for specimen on the lawn. A good second to the peony is the family of the iris, of which the best known species are the German iris, with their many varieties that bloom before the peony, and then the even more beautiful—but less reliable—Japanese iris, with their immense flowers and varieties of color, that follow the peonies. Besides these two are the Iris pumila, or dwarf iris, the Siberian, with its small blue or white flowers on slender stems, the pure yellow pseudacorns, etc.

The next big feature in the perennial garden is the family of the phlox, and if the lover of the garden will only select the proper varieties, concerning flowering season, color and height, he will have, with only the three mentioned principal families, a continuous show from June until frost sets in. But in order not to use too many of one kind and have it monotonous, there are scores of other plants just as nice and worthy to select from which differ not only in their color effect but also in foliage, growth, height, shape and style.

There is, for instance, the larkspur, of which the Chinese white and blue grow only two feet high; the Siberian blue and purple, three feet high; and the old English varieties, formosum and elatum, four to five and even six feet.

Amongst the daisies and daisy-shaped flowers we have a great number to select from. The first one that comes into one's mind, thinking of daisies, is the Shasta daisy, it being by far the most popular. A worthy successor is the giant daisy, or Pyrethrum uliginosum, with an average height of five feet. A great favorite also is the red daisy, or Pyrethrum hybridum; it ranges in color from white, pink and rose to crimson, and comes in both single and double form. The marguerite, or Anthenius tinctoria, is a yellow daisy of great merit, flowering later than the above mentioned ones and is about of the same height, two to two and one-half feet.

With the same group can be counted the coreopsis, with pure yellow flowers and finely cut, fresh green foliage, and the gaillardia, or

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carpet-flowers, with a dark brown center, petals marked with rings of crimson, orange and yellow in a way too difficult to describe. The earliest yellow daisy is the leopard'sbane, or doronicum, which ought to be better known; its flowers measure sometimes three to four inches in diameter, and it grows two to four feet high, according to variety. Another class of daisies are the Michaelmas daisies, starwort, or asters, the flowers that stay with us long after all the others have gone and heavy frost has set in. Their color ranges from pure white, lilac and mauve to dark purple, and their height from two to four feet.

Similar to the aster is the boltonia, white and pink, height from two to seven feet. With the aquilegia, or columbine, and all its hybrids one can also make a handsome display of yellow, white, pink, red, light and dark blue, and in getting the different varieties one can prolong their flowering season to at least six weeks. The bell-flower, or campanula, of which the campanula media, and the "cup and saucer," or campanula media calycanthema, are the best known, has quite a few species; for instance, the peach-bell, or campanula persicifolia, with its hybrids; the little carpathica, or hare-bell, and the rotundifolia, or blue-bell of Scotland.

The platycodon grandiflorum and Mariesi, or balloon-flower, is often classed with campanula, and indeed the flower resembles it very much, but not so the plant. The platycodon if left undisturbed in the ground improves from year to year, a thing not to be said of the campanula, of which the finest are only bi-annuals.

Not to be forgotten are the lilies, and a well established clump of tiger-lilies, either single or double, is a gorgeous sight. Similar in color but not so high in growth are Lilium Canadense and superbum, two natives, and therefore good and hardy. Hemerocallis fulva, or day-lily; and flava, or lemon-lily, are pretty well known and often used in wild plantings. More delicate is the Funkia subcordata, or plantain-lily, with its big, decorative leaves and white, fragrant flowers. One with blue flowers and smaller foliage is Funkia coerulea.

Not many people stop to think that the big carnation grown in greenhouses, and which is getting more and more improved upon from year to year, is related to our common little garden pink, which even if so much smaller and mostly single is a very pretty subject to use for edgings of the hardy border. There are many different varieties and color combinations, and they vary in height from eight inches to three feet. The old fashioned sweet-william, or Dianthus barbatus, of which there is now an everblooming variety (Dianthus latifloius atrococcineus) in the market, belongs here too. The helenium, or sneezewort; the helianthus, or sunflower; the helianthemum, rock- or sun-

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rose; and the heliopsis, or orange sunflower, can be taken into one group. One may select among these similar flowers any height desirable from ten inches up to seven feet. Even the rudbeckia, or cone flower, may be included here. Everybody knows the golden-glow, a double flowering one, but there are about a half dozen of single ones just as desirable; for instance, the purple cone-flower, or rudbeckia purpurea.

The spirea has amongst the herbaceous plants, as well as amongst the shrubs, its many representatives, although the former, in spite of being just as useful and beautiful, are not so well known as the latter. A grand variety of from three to five feet in height is the Spirea aruncus, or goat's-beard, with immense white flowers, like feathers. The Spirea filipendula fl. pl., or double flowered drop-wort; and the similar but higher growing Almaria fl. pl., or meadow-sweet; and the palmata, or crimson meadow-sweet, are of the best.

The Dictamnus fraxinella, or gas-plant, makes a round, well shaped bush, out of which the graceful flower spikes look quite conspicuous; the plant itself without the flowers is quite ornamental.

The dielytra, or Dicentra spectabilis, or bleeding-heart, with its sprays of heart-shaped flowers; and the digitalis, or fox-glove, are quite well known, and more or less so are the Papaver orientalis, or oriental poppies; the Monarda didyma, or bergamot; Anemone japonica, or Japanese wind-flower; and the native wind-flower, Lychnis chalcedonica; and viscaria, or campion; Hesperis matronale, or rocket; Heuchera sanguinea, or alum-root, or coral-flower; Linum perenne, or perennial flax; polemonium, or Jacobs-ladder; the achillea, or milfoil and yarrow; acontium, or monk's-hood; Centaurea montana, or perennial corn-flower; and many others which to describe would take too much time.

There are yet a few dwarf kinds I want to mention: for instance, Arabis alpina, or rock-cress; Cerastium tomentosum, or snow-in-summer; the Phlox amoena and the similar subulata, or moss pink, in shades of rose, red, lilac and white; and the native Phlox divaricata, the Alyssum saxatile, the creeping Lysimachia nummularia, or money-wort, and the well known lily of the valley.

Some plants that are little known and ought to be more generally introduced are Sedum spectabilis, or brilliant stonecrop, fifteen to eighteen inches high and Sedum acre, two to three inches high. Related to the well known climber, Clematis jackmanni, with its big purple flowers, are Clematis davidiana and recta, two non-climbers, growing only two to three feet high with flowers similar to the above, only smaller.

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A few plants for foliage effects are the Bocconia cordata, or plume poppy, with silvery leaves growing six to eight feet high; Gunnera scabra, five to ten feet, and the Rheum palmatum, or ornamental rhubarb; and, finally, the most ornamental and well known Yucca filamentosa, or Adam's needle, which name it gets from the sharp pointed, slender, evergreen leaves, which alone make it attractive—but when they show their immense white flower spikes, measuring sometimes from four to six feet in height and having a hundred or so of bell-shaped flowers on them, their aspect is quite tropical.

Now a few words about the care of herbaceous plants. In the spring when too heavy frosts are not to be expected any more, a part of the covering can be taken off, but it is good policy to leave a good sprinkling of it until the first week in May, when the rest and, with it, any old flower stalks and decayed and bleached leaves, etc., may be cleaned out altogether, unless the covering used is stable manure, in which case all the short stuff may be left till all the plants show above ground, when it should be spaded in. But adding manure at this time of the year or not, the spading should be done anyway in order to loosen up the dirt and to cut out any runners that interfere with other plants and in that manner keep them within their respective limits. Should they get too crowded amongst themselves take them up, divide them and start them anew. During their growing season some of them have to be staked and tied to keep the storms from breaking them.

Faded flowers ought to be cut all along, which will help to bring forth a second or even a third crop of flowers on plants like larkspur, red daisy, phlox, etc. After heavy frosts have done away with all flowers, the stalks may be cut down and burnt up to give the garden a better appearance and to get the covering on more easily. This last work for the season in the perennial garden should not be done too early. There should be a couple of inches of frost in the ground before putting on any covering, which will make them more fit to stand the hardships of the winter season.

Mr. Emmons: How deep in the ground should we set the peony? Should it be mulched, and with what?

Mr. Meyer: The peony ought to be planted three or four inches below the surface of the ground; that is, the eyes ought to be three or four inches below the level of the ground. So far as mulching is concerned, almost any strawy manure is good.

Mr. Emmons: Would you advise mulching?

Mr. Meyer: Yes, it is better, because it keeps the hardest frost out of the ground, and if it is exposed too much, it is liable to die out in the winter.

Mr. Emmons: Is there any difference as to the quantity you use as to leaves, straw or whatever mulch you may use?

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Mr. Meyer: There is one thing: if you use good cow manure, the snows and rains during the winter and spring will wash some of that manure into the soil, and while it acts as a mulch, it will at the same time act also as a fertilizer; but leaves are about the best covering for almost anything.

Prof. Waldron: The first freeze in the North is apt to come pretty early, and for that reason would not a light covering be well to put on about the first of November, and later, when it freezes up solid, put on more?

Mr. Meyer: Yes, that would do very well, but even if there should be a heavy frost the first night, it would not penetrate the ground more than three or four inches. That would not hurt them at all. It is so with all other herbaceous plants; they do better if there is a few inches of frost in the ground when you give them a covering; that is, it is better to cover them in that condition than it is when the ground is open.

Prof. Waldron: This year when the first freeze came, it was an extremely hard one. The cold weather extended over three or four days, and the strawberry plants were not matured because only a week previous we had a temperature of seventy degrees, and then came that extremely hard freeze. I had our strawbrries covered with an inch of litter, and that gave them some protection against that severe freezing when they were in a soft condition, and then later we covered them more heavily.

Mr. Meyer: So far as strawberries are concerned, I think that is a good idea. The strawberry is apt to freeze, and might be injured, but with the peony it is different. The crown of the strawberry is above the surface and the roots are rather shallow, but the crown and the roots of the peony are clear under the surface.

Mr. Radabaugh: Is there any danger of the peony freezing whether it is covered or not?

Mr. Meyer: Oh yes, certainly. I know down east, where it freezes from zero to twenty below zero, we had them in boxes and in barrels, with just a little litter over them, just so the root stuck out. They were forgotten where they were when we planted in August, but we planted some of them in the following spring, and they all came up.

Mr. Radabaugh: Well, that would show they would stand a very low temperature.

Mr. Meyer: Oh, yes.

Prof. Robertson: When are they best transplanted, in the fall or the spring?

Mr. Meyer: The best time is in August, but not later.

The President: There is a lady here who wants to know something about the spirea Van Houttii.

Mr. Meyer: It is propagated very easily from hardwood cuttings. In the fall take the wood they made during the previous summer and cut it in lengths of six to seven inches; stick them in the ground, flush with the surface, and they will grow without difficulty. Be careful not to let them dry out before you put them in the ground.

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Mrs. Henderson: What protection would you give the Yucca filamentosa?

Mr. Meyer: It ought to be tied up so that the old leaves protect the younger leaves in the center; then they ought to be covered with leaves and straw up to the top. If that is not done the sun will bleach the end of the leaves, and in the spring when it is uncovered three or four inches of the leaves are likely to be white instead of green.

Mrs. Henderson: Would you plant the yucca in a bed by itself, and can you give it too much water?

Mr. Meyer: In summer there is hardly any danger of giving it too much water. The roots go very deeply into the soil and adjust themselves as they please. If they do not get enough water at the surface, they will get it from below. Plant them by themselves. I think a mass of yucca looks better as a specimen on the lawn instead of in the hardy border.

Mrs. Henderson: In certain parts of our city the soil is very thin, and I would like to know whether the ordinary leaf mold, such as we find in the woods, put around the base of a plant, would be of any benefit.

Mr. Meyer: If you have too much sand in your soil, and it becomes too dry, you ought to add some clay. If you want to have a hardy border, dig out some of the top soil and put in clay. I do not mean the brick clay or the blue clay, but good, porous clay. Put that in the soil and mix it with your sand or top soil and put that underneath with some black dirt on top, and if your top soil is very light, add some clay to that.

Mrs. Henderson: What would you use for fertilizer every year?

Mr. Meyer: Stable manure is about the best fertilizer you can use. During the summer, for instance, you cut back larkspur, and it is a good thing then to put bone meal around the base of the plant.

Judge Moyer: It seems to me the florists ought to get some of the yucca from the bluffs we have up here. I think they are of equal beauty with the filamentosa, and they grow on the Missouri river straight west of here.

Mr. Meyer: I don't think there is any danger of winter-killing of leaves. We heeled in yucca last fall which were not covered any more than any other herbaceous plant, and we were surprised that the frost did not injure them. They were just as good this summer as they were before.

Mrs. Martin: How do you propagate the bush hydrangea?

The President: I think the lady means the hydrangea paniculata grandiflora.

Mr. Meyer: The hardy hydrangea you can hardly propagate from hardwood cuttings; you have to propagate from soft wood cuttings in summer, and that ought to be done under glass, but sometimes you can take them a little later in the summer, say in July, and plant them in a little sandy soil, and you may succeed with some of them.

Prof. Green: You can also layer it.

Mr. Meyer: Yes, and if you have a bush that spreads you can bend the branches down to the ground and cover them and make two

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or three shoots in that way, but if you propagate the way the nurserymen propagate them, the only way to do is to use soft wood cuttings; that is the quickest and the surest way.

Mr. Geo. J. Kellogg (Wis.): Speaking about mulching the peony, I think it is necessary to mulch. Ten years ago I lost all my peonies, two thousand rose busnes, three acres of vineyard, and seventy-five thousand apple trees because of a dry freeze we had that winter. I do not know mulching would have saved them, but it is absolutely necessary to mulch.

The President: I presume it depends somewhat upon the conditions when they enter the winter. We had plenty of rain this fall, and the plants went into winter quarters in very good condition. I think there is one plant to which we do not give enough attention and that is our native aster. There are from forty to fifty known varieties of asters in the United States, and I think the florists are making a mistake in not cultivating some of those varieties.

Mrs. D. W. C. Ruff: I would like to make a few remarks about planting peonies. I find it is possible to plant them too deep, and that is the reason why so many peonies do not bloom. Many varieties will not bloom because the soil is too heavy, and the peony will rot out or get in a diseased condition so it will not do well. Plant it not too deep, because if you plant it too deep it will mould and decay. In heavy soil, four inches is quite deep enough, and I would prefer planting them a little more shallow. Most people recommend planting peonies too deep. In putting them in too deep in loose soil, they will settle and you will find your roots will be down six or eight inches deep, and the chances are they will not grow. That is a warning I want to give against possibly planting the peony too deep, especially in heavy soil.

The President: I am very glad to hear so many questions asked about flowers and plants. It shows that the people are very much interested in the aesthetic side of horticulture. I think it will interest you to know that the Park Board of Minneapolis has reserved about thirty acres in which to plant trees, shrubs, and flowers which are hardy, and out at Lyndale Park, within the next few years, we hope to have a fine collection of trees, shrubs and perennials—as fine as can be found anywhere in the west. The park or garden will be conducted as an educational feature. Every plant will be labeled, and it will be an education for the people to come there to see those plants and to learn what they can plant themselves in their own homes.

How Much Shall We Mix Varieties.—"A year ago this fall I planted a 30-acre orchard, one end to Duchess and Transparent, four to four, the other end to Jonathan and Grimes, four and two. That is, there are four rows of Jonathan to two of Grimes. I planned to top-work every fifth or sixth row crosswise to Wealthy. This I have not done yet, but think I shall. If I had set one row to Jonathan and the next row to Grimes and Wealthy alternately, I would get better pollination and more fruit. But there are serious objections to mixing up as much as that. It is not so convenient in harvesting the apples, and different varieties may need to be sprayed differently."

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The Problems of the Commercial Orchard.

P. H. FOOTE, ST. PAUL PARK.

The labors of the veteran horticulturists of the northwest in the development of hardy varieties of apples suited to the severe conditions of this section have been so successful as to win the attention and admiration not only of our own people but of those who live in what was supposed to be a more favorable location for the growth of the apple.

The success attained in the growth of this fruit by those who were willing to labor and profit by the failures recorded, have made it possible for us today to consider the planting of an orchard as a desirable business proposition, fraught with no more danger of failure than the average business venture, possibly with less.

It has been demonstrated beyond a reasonable doubt that with due care in the selection of suitable varieties and with proper care of the orchard, that it is one of the most profitable crops grown on the farm, requiring less labor and expense for the values returned.

In planting an orchard a series of problems arise in succession for consideration, and it is with these that I wish to deal briefly:

Soil and Location: Generally speaking any well drained soil capable of producing good crops of grain or vegetables will grow an apple tree. If possible select land sloping to the north or east for this fruit, as the soil on those slopes is more retentive of moisture than lands exposed to the hot south or southwest winds, and the blossoms are less liable to be injured by late frosts in the spring time.

Preparation of Soil: Having selected the ground to be planted to the orchard, give deep and thorough cultivation for a season and plow thoroughly in the early fall, firming the ground at once by use of disk and harrow. Double disk and harrow the land again in spring as soon as the soil can be worked without mudding it.

Selection of Stock: You will do well to hold very closely to the varieties recommended by this society for your planting, varying the proportion of the early varieties according to your accessibility to a market. By all means secure northern grown stock for your planting.

Planting and Cultivation: As soon as the soil is well worked over with the harrow, mark out the rows for planting. At least twenty by twenty-two feet should be given each tree. Some varieties need more space as they age, perhaps twenty-five feet square is not too much to allow them. Make the holes for planting large enough to give soft earth for the young fibrous roots to start their growth in and deep enough to permit returning a few inches of fine earth to the hole before setting the tree.

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With a sharp knife prune smooth all battered ends of roots and shorten the limbs in proportion to the roots. Do not cut the leader. Dip the roots in a mud bath and plant, packing the earth *firmly* around the roots with the pressure of the foot, setting the tree a little deeper

Harvesting apples in a Minnesota.

than it stood in the nursery row on heavy land and about six or eight inches deeper on light soils. Wrap at once the trunks of the trees with burlap or some other protector to avoid sun-scald, as it means much to your orchard to preserve from injury the trunks of the trees by sun-scald, mice and rabbits while they are young. Plant some

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cultivated crop between the rows and cultivate thoroughly until the middle of July, when the cultivation should stop to allow the wood to ripen up for winter. Continue the cultivation each season at least for six or eight years and for best results while the orchard stands.

Watch for insect development and stop them with some suitable spray on first appearance. They are easily handled at that stage of their existence. As the orchards age, more thorough and systematic spraying will become necessary to get the best results and to secure a high percentage of perfect fruit.

Picking and Marketing the Crop: Upon no one feature is the success of the business more dependent than upon the marketing of the crop to advantage, and this requires a thorough knowledge of the market conditions. From a close observation of the market for a number of years I am satisfied that most of the fruit sold in the Twin Cities is disposed of at a price from twenty-five to fifty per cent below the price it should bring the grower if it were put on the market in proper shape to attract the attention of the consumer and the retail grocer who caters to the wishes of his customers at all times.

A fruit growers' association is the only systematic and economical medium for handling the product of the orchard. In the absence of such an organization, the following method of marketing will be found to possess some merit. As soon as the early varieties of the Duchess type are two-thirds grown, begin to pick the largest and best colored apples, thinning out the fruit to relieve the trees and allow a full development of only a small portion of this class of apples. The perishable nature of this fruit when ripe and its disposition to windfall badly, together with the higher price received for the fruit at this season of the year, justify its early picking and marketing. The bushel box is the best package to use, as they bruise less than when packed in baskets or barrels—and it is a desirable package to retail.

Pack all culls and windfalls in separate boxes, and stamp your name and address on all boxes of fancy fruit. Push the culls on the market in October but be sure to box all number one fruit and wait until cold weather comes on and the rush of poor quality of fruit, which always floods the market in October, is used up, which will usually occur before the month is past. The demand for a better class of fruit is sure to come by November. And with Baldwins selling on commission row today at two dollars and upwards per box, you ought to be able to secure a satisfactory price for Minnesota apples.

Mr. Foote: I wish to introduce to you at this time a sack used for the purpose of gathering apples, and which seems to me one of the most convenient and practical appliances for picking apples off the

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trees that has ever come to my notice. This will hold about a half bushel of apples at one time, and is fastened to the shoulders in this manner (indicating), being held open here (indicating) by a wire frame, which gives the picker an opportunity to work with both hands. It will take about two of these bags to fill a bushel basket, and stepping from the ladder, it can be dropped in this manner (indicating), so the apples slide out, which prevents the bruising of the fruit. (This sack is now in the secretary's office.)

Capt. Reed: Where can these sacks be obtained?

Mr. Foote: I am not in a position to give you the address of the maker. This is a sack, the condition of which shows it has been used, I got this simply as a sample.

Mr. Brackett: Is that not a regular orange sack?

Mr. Foote: Yes, it is worth about $1.25, and the sack is used to gather oranges in California.

Mr. Probstfeld: I agree with this idea of packing apples in boxes, but what is the standard for us to use? I don't know what is standard or what is not.

Mr. Foote: The standard for western boxes is 10½x18 inches, and New York uses 11½x20 inches, and 12x18 inches, but 10½x18 inches holds a bushel, outside measure.

Mr. Morris: That is a short bushel.

Mr. Foote: I think that is what you get in an ordinary bushel.

Mr. Ole Hagen: I understand they passed a law in this state requiring an apple bushel to weigh fifty pounds. I was selling apples this fall, and I was selling them fifty pounds to the bushel.

Mr. Foote: That is usually accepted as a bushel.

Mr. Hagen: I tried several times to weigh a bushel of apples, and I found it pretty hard to put in fifty pounds unless it was a heaped measure and then some apples weigh less than others.

The President: They are usually sold by the basket.

Mr. Probstfeld: Does any one know what a legal bushel is in this state? If the law requires a bushel to weigh fifty pounds, what should be the weight of a box?

The President: He wants to know whether any measure is made that is standard.

Mr. Elliot: Where they sell by the box, they are not stated to be bushels. Our strawberries are sold by the box, and we do not say there is a quart in the box. We all know that the strawberry boxes we get are known as "short quarts," and I suspect bushels are short too.

Mr. Probstfeld: Yes, some boxes you can turn upside down and get more in the bottom.

The President: People talk that way when they are buying, but not when they are selling.

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Some South Dakota Tree Growing Experience.

N. H. DYBVIG, COLTON, S. D.

In the spring of 1880 I moved onto my homestead, ten miles west of the Big Sioux River, in Minnehaha county, South Dakota. At that time there was not a tree to be seen around here. In the spring of 1882 I planted my first trees, some cottonwoods and white willows. They did well. The next year I gathered some seeds from soft maple trees, growing by the Sioux River, and planted them. They grew real well and are now large trees.

I always liked evergreens, so thought I would plant some white spruce, Norway spruce and Norway pine. The white spruce did real well, some of them now being twenty-six feet high, but the Norway spruce and Norway pine all died. A few years later I planted Colorado blue spruce. It is one of the hardiest spruces we have and also the prettiest. The Black Hills spruce is also a hardy and pretty tree.

Of pines I planted Black Hills, ponderosa and jack. They are all growing nicely. I like the ponderosa pine the best; I think they are just the thing to plant for a shelter belt on the farm. Two rows of pine are just as good as twelve rows of ash or box elder.

I planted my first fruit trees in 1886, some apple and plum trees. Most of them did well. I decided that there was no use living on the prairie without fruit, so I planted a few trees every year, but they were not all of the kinds that would grow in this locality. One year I planted an orchard of fifty apple trees. I bought them from a nursery salesman who sold trees for a nursery somewhere in the east. The first year they all grew, the second year half of them dried up, and the third year they all died except one. The next time I planted an orchard I bought the trees from my home nurseryman, and this time I had better luck. Nearly every one of them grew, so we have had all the fruit we can make use of, and the best years we have sold considerable.

Some years ago I made a border twelve feet wide, on one side of our grass plot around the house, and planted several kinds of roses, flowering trees and shrubs, lilies and other bulbs. It is a delight for the whole family, because in summer there are some new kinds of flowers to see nearly every day. There are flowers from early spring till hard frost in the fall. It starts blooming with tulips and lilacs and ends with phlox. Some of the roses and shrubs that will stand the winter here without protection are Harrison yellow and rosa rugosa, spirea, syringa, honeysuckle, lilac and snowball. The roses and flowers that we have that need winter protection are Crimson Rambler,

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Queen of the Prairie, Madame Plantier, Pink Rambler, Baby Rambler. hydrangea, peony, tulips, lilies of different varieties, phlox and pearl. But the roses that need winter protection are so beautiful that I don't think you would regret the little time you spent in the fall in covering them up with some strawy manure. That is the only thing I have covered our roses with, and they have done very well; but the ground must be worked so there will be no grass or weeds. The roses will not do well if you just dig a hole in the sod and plant them. Even if they grow the roses will be much smaller than the roses on a bush that is grown where the ground is cultivated.

Horticulture at the State Fair.

C. C. HUNTER, MINNEAPOLIS.

In speaking of horticulture at the state fair it is a known fact that this department has one of the best kept and most attractive buildings on the ground. Every one that enters the building is at once interested in the flowers, fruits and vegetables shown there, and the question is asked thousands of times, "Are all of these apples grown in Minnesota?" or "Your exhibit is way ahead of the Alaska Yukon Fair; tell me if you can grow apples like this in Minnesota, why can't we buy them in the market?" Now I could go on and tell you all how to grow and raise a commercial orchard here in Minnesota, but I must keep in bounds of my subject.

We should all be proud of the horticultural exhibit at our state fair. People as a rule learn by comparison quicker than in any other way. I take it that every member of this society knows how to grow fruit, but thousands of the people that see the exhibit would like to know more about the growing of our fruits and vegetables, to have demonstrated a way to grow better fruits in planting an orchard, showing the kind of trees to plant, distance apart, how and where to plant as to location and soil, varieties to use, methods of spraying—and, by the way, one of the most essential requisites of a demonstration of this kind is to have on exhibition an up-to-date spraying machine and show how to use it. Methods of top-working, grafting and budding should be shown, because when you mention that you can top-work a Wealthy to a Hibernal, some look at you as if you were talking Greek to them.

Do you realize that last year we had over 5,000 plates of apples in the main hall and over 1,000 plates in the county exhibits? It is surprising to note what Minnesota is doing in the growing of apples. I met last fall several growers who would have over a thousand bushels

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to sell. I take it that the time is not far off when we shall have an apple growers' union, and they can meet every year at the fair and discuss the growing and market conditions of apples.

Now there is one more thing I would like to mention. I have traveled around a good deal in the last few years here in Minnesota, and it is surprising the number of farmers that do not attend the state fair. I have noticed on some of these farms no small or large fruits at all, and in one place in particular a farmer told me he never attended the state fair and lived in the state for forty years and never saw an apple tree grow in Minnesota. Now there is something wrong some place. If you can't attend yourself, send your boys or girls, and if they can't go send some one of your neighbors. Send to the secretary for a premium list, and it will show you what the horticultural division is doing. I have met many farmers here in Minnesota that are pretty well fixed that have been talking with some land men and are contemplating moving to Colorado or Montana to grow fruits. I say, stay right at home. You will make good if you get busy. You have just as much to contend with in Washington or in California in growing of fruits as you do in Minnesota. We have the soil, the climate and the market.

House Plants.

ALFRED J. SMITH, MANAGER LAKEWOOD CEMETERY GREENHOUSES, MINNEAPOLIS.

House plants, and how to treat them, is a subject which would take more time than I have allotted to me this morning. However, I hope I may be of help to some who delight to have plants in their homes.

First, let us consider plants that bloom. Geraniums are beautiful in the winter time, and if you will carry out my suggestions, success will be yours. For red, S. A. Nutt; pink, La Countible; salmon, Pointervine. Take cuttings about the first of July, six inches long. Remove all the leaves, except the two on top; then take a flower pot about three inches across, fill with soil, placing your cutting in the center, pressing the soil firm. Plunge the pot up to the rim in some shady place out of doors, water once each day, and in about four weeks the cutting will have taken root.

Now take a flower pot about five inches across, place some drainage over the bottom hole, and carefully take the young cutting and put in the larger pot, making the soil firm. This time put the pot in some sunny place. About the last week of August pinch back all the main

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shoots, leaving the plant about four inches high. At the end of September remove the plant into the house, placing it in a sunny window. Be careful not to over-water. It is a good rule to wait until the soil crumbles on top before watering; then drench well, until the water passes readily through the soil into the saucer. Here it must not be allowed to stand, as any quantity of it will rot the roots. Do not fail to turn your plant so that all sides will get the light. About the middle of October your plant will begin to blossom and will be a source of much enjoyment all the winter. The primroses are plants which will give pleasure. The Chinese primrose, with its dark green foliage and various colored blossoms, will last for weeks if not over-watered; while on the other hand the primula obconica, the one which sends up several spikes of flowers at a time, will soon fade if allowed to dry. Be careful and remove the dead flowers each day.

Cyclamen are very satisfactory, making one of the slowest winter bloomers. To succeed, keep in a cool room near a window. Every other day place the plant in a bowl of water, allowing the bottom leaves to rest in the water. If allowed to dry the flowers will wilt, and fade away. Keep dead flowers removed from the plant, as it is the nature of all blooming plants to seed, and when they have fulfilled their mission to fade away.

Azaleas are satisfactory if not allowed to suffer for water. When you purchase an azalea do so from some reliable florist. Select a plant that has buds as well as flowers. Fight shy of those azaleas at Easter time which have their pots covered with fancy papers and ribbons. Every other day set the azalea in a bowl of water, one deep enough to cover the soil, and let it remain there a few minutes. If you follow these suggestions your azalea will remain in blossom for five or six weeks.

There are other plants that bloom which also do well in the house, but time will not allow me to mention them. But remember that all bloomers need water and light, and will do better if there is a little ventilation in the room, by opening a window from the top.

Foliage Plants.—The rex begonia does well if not in too large a pot. Do not wet the foliage of the begonia.

The coleus makes a good house plant, as the dry atmosphere of the house agrees with it and also brings out the rich color in the leaves. Follow my suggestions about the geraniums for the coleus, and you will have splendid plants all the winter; once in a while pinch back the leaders so as to make the plants bushy. Mealy bugs are a trouble of the coleus. They are found on the under side of the leaf. Take a drop of oil on the end of a toothpick and touch the bug on

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the back, and you will kill it. Be sure and not let the oil touch the leaf.

Palms are a source of much trouble to some people, and when you see how they treat them, it is not to be wondered at. Some time ago a lady said to me:

"Mr. Smith, my palm is looking so sick; I have done everything I know of to help it. A friend told me to put a little castor oil in the water as it would make the leaves green. Another told me to stew a small piece of beef, and pour the juice into the soil. And now my trouble is a lot of white maggots. To kill these I poured some kerosene oil in the dirt, and now the leaves are all drying up."

No doubt the maggots came from the beef stew, and when the oil killed the maggots it also killed the palm.

To succeed with a palm never allow water to be in the jardiniere in which the palm is standing. Once a week set your plant in a tub of water for a minute or two, turning your palm over, so the leaves are covered with water. Do not let your palm stand too near a radiator or steam pipe. The scale insects are very troublesome to the palm. A solution of tobacco soap is best, and it may be purchased at any of the up-to-date florists.

The rubber plant, with its dark green leaves, does well in the house. I well remember when almost every home contained one. But for some reason the florists do not carry them any more. I think it a pity, for so few plants can stand hardships like these. If you should have one, and it drops leaves, by pinching out the center of each shoot they will branch out again.

Farfugium grande is a plant which is extremely ornamental. It has large circular leaves, often a foot across, spotted with creamy white and yellow, thus making a wonderfully striking and effective room decoration. Provision should be made for drainage as standing water around the roots often causes disease and the loss of the foliage. The common name is leopard plant, and I am at a loss to know why more florists do not keep it.

Pandanus vetchii, or better known as screw pine, because of the spiral arrangement of its leaves. This variety makes a charming table decoration, but it must not be over-watered, or water must not be allowed to touch the heart of the plant.

On ferns so much could be written, but if you follow the suggestions for the palm you should succeed. The most satisfactory of the ferns is the Boston, or sword, fern. The Nepherolifis Whitmani is the fern used in filling fern dishes. Water this fern every day, and do not allow water to stand in the outside dish; as soon as meals are over place the fern dish in some light window.

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Plants are like human beings, they will strive to exist as long as they have half a chance. Water and large pots are answerable for the fate of many a plant.

Water is a food and a bath for the plant. It opens all the pores and cleans them of foes, but, on the other hand, plants do not wish to be forced to live in a bath tub.

It is impossible to give an exact rule, as conditions vary. The house is so entirely different from the greenhouse it is not to be wondered at if plants do not take to the change. But if you will see that your plants do not suffer for water, or are not placed near stoves or radiators, and that the room is ventilated each day from the top of the window, and do not turn your gas on till you have the match ready, you should succeed with your house plants.

The President: We have had a very interesting paper by Mr. Smith; he is thoroughly posted in this matter, and I trust you will ask him questions.

Prof. Robertson: Would it pay to keep an azalea over the year?

Mr. Smith: It will hardly pay. When it gets through blooming, it needs to be put in the greenhouse, and it needs a temperature of about sixty, with water sprayed over it two or three times a day. It does not pay to carry it over; at any rate, it does not pay the florist.

Mr. N. H. Emmons: Will you please give in detail what is necessary in the care of a rubber plant. I find it is a very handsome plant, and I would like to know how you take care of it.

Mr. Smith: So far as the rubber plant is concerned, I do not know of any other plant that will stand as much hardship and neglect. If you will allow a rubber plant to stand in a jardiniere, with water, the root will rot. If you allow it to dry out too much, it will shed its leaves, but if you will pinch the top of the rubber plant, it will make side shoots and leaves.

Mr. Emmons: Would you advise putting water on the leaves?

Mr. Smith: Treat them the same as other plants; you can sponge off the leaves with water. It is the red spider that causes the most trouble.

Mr. Emmons: Many of us are ignorant as to trimming the fern.

Mr. Smith: In trimming too much you make too many outside runners. These runners will send up other runners and will cause the plant to die. If you will keep the outside shoots cut off and give it plenty of water, you ought to have no trouble. I have seen a good many ferns ruined by people carelessly opening the window. The fern will not stand any cold weather.

Mr. Emmons: Would you advise setting them in a pot, with water beneath?

Mr. Smith: No sir, they do better in a small pot in the house and watered every day. Say, if it is in a five-inch pot, if it is making a good growth, do not touch it, let it stand, let it alone. That is the trouble with people not succeeding with house plants; they bother too

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much with them, and then they come to the florist and ask what the matter is.

Mr. Benjamin: What treatment would you advise for the umbrella plant?

Mr. Smith: The umbrella plant is a water plant; it is about the same as the Boston fern; it needs to be divided every year in order to do well. It will succeed very well in a saucer with water. At our place we have a little fish pond, and we have them growing right in the water. They will send up little shoots all the time, and they will take all the moisture you can give them.

The President: Mr. Smith is right in regard to the care of house plants. The principal reason why people do not succeed better with house plants is that they fuss with them too much. The fact is, they should be watered when they are dry—thoroughly watered—and if they are not dry, if they do not need any water, let them alone.

NUT GROWING IN MINNESOTA.

HENRY HUSSER, MINNEISKA.

Nut growing in Minnesota is a neglected horticultural possibility. The enthusiastic horticulturists of the Northwest have worked hard to get fruit adapted to our climate. They have done this laborious work not for their financial success, but for the good of the coming generation. What results do we have? We have apples in size, flavor and color that can proudly stand at the side of the best in our country, and especially so if we learn how to raise unblemished fruit. We have berries of best quality. We have grapes and cherries, and already experimenters have some pears and peaches to show. And what has been done with our native plum by raising seedlings, by grafting, by budding and by hand-fertilization? We have plums of far superior quality in size, color and flavor than we had from the native plums, and even the thorns have been bred out of them.

But what has been done with our native nut trees, those majestic trees in the ravines and hillsides of southeastern Minnesota? They have gone the same way as most of our forests; they are slashed down for the lumber or wood to make way for grain fields, and when washed out so the land can't further be cultivated it is left to make poor pasture. Many sidehills and ravines that are an eyesore to the owner could be spots of beauty and a source of income in fruit and lumber. Black walnut lumber is much sought for by furniture manufacturers and cabinet workers. Hickory nut trees are sought by vehicle manufacturers, and the limbs make firewood of the best quality. Besides this a nut grove would be a monument to your children,

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nicer than any sculptor could make out of stone or metal. The nuts of either kind always find buyers, and especially hickory nuts, with their unequaled flavor, are well prized everywhere.

You may say, we have all kinds of fruit, and why plant more kinds yet? To this it might be said, we want and should improve what we have; we should add promising new things in horticulture for beauty and utility. So you will set an example to your neighbor, and your children will realize a paradise in your home farm. Try to be a leader in all good things. How happy are the children in the long winter evenings when they have some nuts to crack! What pleasure it is to you to present them to some unfortunate poor children on Christmas eve! And don't your heart rejoice when remembering back to your own sweet childhood days, when your kind parents filled your stocking on Christmas evening with some nuts beside the sweets? And how you will enjoy a piece of nutcake that your dear wife bakes on some family feast or holiday!

Nut growing deserves the full attention of every land owner. The trees are a beauty on the private lawn, in the city park and as solid groves or along the highways. If you haven't time to do it yourself give your boys a chance to plant and care for a nut grove, and if you let them have the income from such grove they will be glad to do it—and it will be a strong tie to keep them at home, especially so where all kinds of horticultural products are raised and served, some every day in the year.

We can grow nuts successfully if we follow closely nature's ways. We have four kinds of edible nuts native in our state, the black walnut, the butternut, the hickory nut and the hazelnut. The last named is a shrub four to six feet high. Its nuts are ripe in the latter part of August and for propagation should be planted when ripe about one inch deep, and transplanted late in the following spring into hedgerows or bunches. Walnuts, butternuts and hickory nuts get ripe in September and October and should be planted soon after, from one to two inches deep, where you want the trees to grow. Since this might be inconvenient for many, they could be planted in the garden where they will freeze and thaw and then carefully dug and transplanted the following spring when they are about four to five inches high. Young trees of three to four years are hard to grow when transplanted.

In transplanting the seedling be careful not to break off the nut, which gives nourishment to the seedling, and pack the soil well on the roots. Keep the grass away from the young trees by shallow hoeing or mulching with some materials that will not heat, and keep also fire and live stock out. To plant a grove I would advise to

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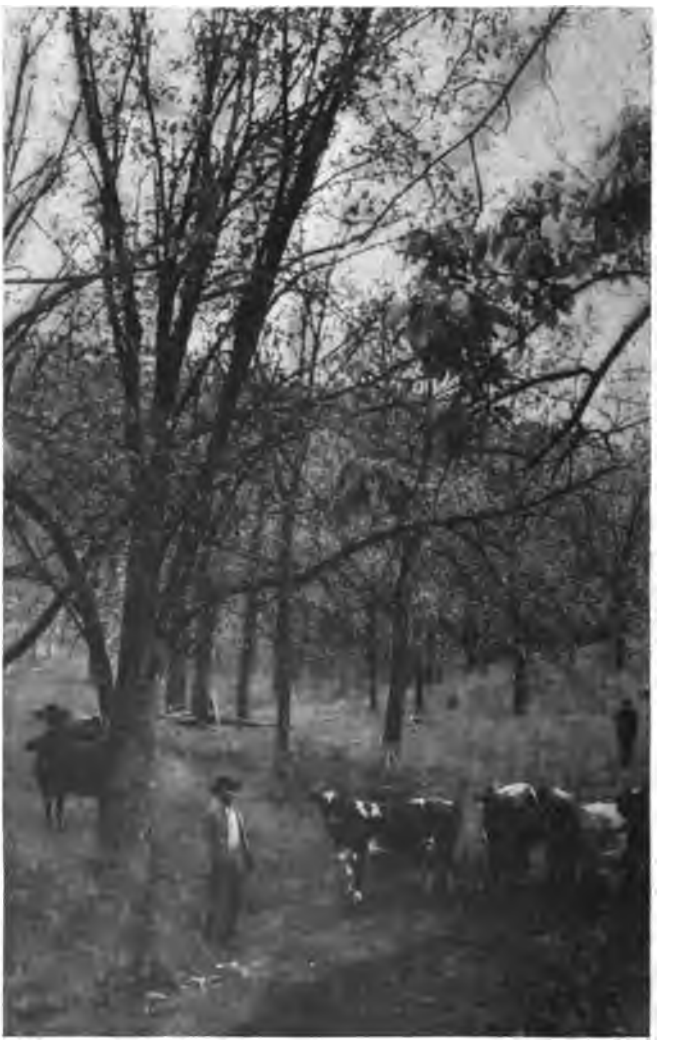
plant ten to fifteen feet apart, and after ten or twelve years, when the tops meet, cut out every alternate one in the row ten feet apart. This will leave them at the proper distance for hickory trees, which



Henry Husser in his walnut grove, at Minneiska, Minn.

will attain a size of about one and one-half feet in diameter and about twenty to twenty-five feet high.

Black walnut grows two to two and one-half feet in diameter and even three, and gets as high as forty feet. Their feed roots reach

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out for twenty feet, and when the black walnut grove is about twenty years old it should be thinned out again to have them stand thirty to forty feet apart. Wood so thinned out will make furniture lumber or very lasting fence posts. A grove twenty years old will have a beautiful parklike appearance. While rough land seems very much adapted on account of good drainage, they will succeed anywhere except on very poor sand or heavy swamp soil, provided no water stands on the roots.

Our native nuts are of good flavor, but since we never should be satisfied when we can improve something, I think our experiment station or some horticultural wizard should try to improve our native nuts—to get black walnuts with thinner shell, the hickory nut of a larger size and butternut without the rough surface.

This paper would not be complete without mention of the American sweet chestnut, which deserves an extended trial at least in the southern one-third of our state. The horse chestnut deserves our attention also as a lawn tree. Its beautiful growth in body and leaf, as well as the handsome big spikes of flowers, call for our admiration.

To awake interest in nut growing in Minnesota it would perhaps be advisable to have a nut contest at the state fair, but so that every exhibitor had to show alongside of the dried nuts a twig with green nuts and leaves.

Mr. N. C. Radabaugh: How large are your hickory trees ten years old?

Mr. Husser: They average about four inches in diameter and started to bear when seven years old.

Mr. Radabaugh: How tall are they?

Mr. Husser: They are about twelve feet tall.

Mr. Radabaugh: Were the hickory trees transplanted or were they grown from the seed?

Mr. Husser: We had the seed.

Mr. Radabaugh: Are they the shellbark or the large ones?

Mr. Husser: The shellbark.

Mr. S. P. Crosby: Will black walnuts do well in Minnesota?

Mr. Husser: Yes, you can find trees three feet thick in Minnesota. They will grow very well and will make a fruit crop every year.

Mr. W. S. Higbie: Do you grow butternuts?

Mr. Husser: Yes, sir.

Mr. Higbie: How far north can hickory nuts be grown successfully?

Mr. Husser: The black walnut and the hickory nut can be grown one hundred miles north of Minneapolis, and if I were two or three hundred miles north I would try it just the same. I always feel we can raise fruit a little farther north than is usually supposed we can.

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Mr. R. M. Probstfeld: My black walnuts have borne every year at Moorhead, Clay county.

The President: How big are they?

Mr. Probstfeld: They are probably six inches in diameter. For the last four or five years they have borne every year. I also have butternuts, but they do not bear as heavily as the black walnuts.

Mr. Duncan: Can shellbark hickory be grown on the prairie? I have black walnuts and butternuts in abundance, but I have not grown the hickory nut.

Mr. Husser: I have seen hickory nuts growing on the prairie, but not where water accumulates. In any place where the water stands in early spring and winter, and it freezes, they will kill out.

The President: Do they not need protection?

Mr. Husser: No, not the hickory or the walnut tree; at least I have not seen any bad effect.

The President: I think you would find it will in light prairie soil.

Mr. W. J. Tingley: The gentleman said he grew sweet chestnuts. I would like to ask what success he has had with them.

Mr. Husser: There is a sweet American chestnut tree about three miles from Windom. The fruit was exhibited here three years ago, and it bears every other year.

Mr. Tingley: There are two trees near Stillwater that are bearing fruit.

The President: Are the nuts edible?

Mr. Tingley: Yes.

Mr. Clarence Wedge: I am very much pleased to hear this paper read on nuts and that there should be so much interest shown in the subject. I was in the stores at Albert Lea just before coming to this meeting, and I noticed some native black walnuts. I asked the grocer what they were retailing at, and he said a dollar a peck. It appeared to me there would be a good profit in raising them at half that price. In our county, at Albert Lea, we are at about the northern limit of the shellbark hickory, and I was told that one of our people, who has a grove of native hickory, sold her nuts for three dollars a bushel, which seems to me a good price. I think we have in the past neglected these trees to some extent, and it ought to be profitable to every farm to have a small grove of edible nuts.

Mr. Husser: About the price of nuts: I will say we never had any trouble in getting rid of hickory nuts at two dollars a bushel, and black walnuts at one dollar a bushel, and butternuts, which are not shelled before they are sold, we got fifty cents a bushel. If a storekeeper charges a dollar a peck, he is in the same class with the meat packers. (Laughter.)

Mr. Probstfeld: I take a bushel of black walnuts in the shell to fill a peck measure when the shucks are taken off. I know I could not make money at the price mentioned. That applies only to black walnuts.

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Mr. D. T. Wheaton: I would like to ask those who have planted butternuts whether they are not troubled with sunscald. The greatest trouble I have met with in growing butternuts is with sunscald.

Mr. Higbie: I was asked the same question. I notice where trees are exposed they are subject to sunscald. I do not think it would be profitable to raise them in an exposed location, but where they are protected we would not have that trouble.

The President: I think probably Judge Moyer can tell us something about that matter.

Judge L. R. Moyer: In western Minnesota, in Chippewa county, black walnuts have been grown twenty years, but we find butternuts do not do well. I do not know of any butternut trees that are bearing, but black walnuts are doing well.

The President: Butternuts are found indigenous further north.

Judge Moyer: Oh yes, they grow further north.

The President: I think Mr. Nutter told me he saw butternuts near Aitkin.

Mr. Dewain Cook: I planted butternuts in Cottonwood county. I found trouble with sunscald. I had my trees trimmed up nice and straight, and that is where I made my mistake. Since then the old body has died and new shoots have come up all around, and I think we can grow butternuts as well as walnuts if we let them grow so they will be protected. Ordinarily they do not sunscald unless we have a late frost. The bark is smooth and will sunscald when the walnut will not.

Mr. Wheaton: The only way I succeeded in growing them was to protect them from the sun; otherwise every single tree would sunscald.

Mr. S. D. Richardson: In Winnebago City we have old trees of butternuts. I have never seen any sign of sunscald. They were not protected, and they were planted west and north in a square.

Mr. Seth Kenney: I have quite a grove of butternuts, of which the outside trees are exposed and which sunscald, but on the inside where the trees grow thicker I have seen no sign of sunscald.

Mr. Geo. J. Kellogg (Wis.): About forty years ago I gathered some very fine hickory nuts from a neighboring grove and planted them every twenty feet clear around a forty acre field. I never succeeded in getting but one of those nuts to sprout. I planted them immediately after gathering, and I never could account for the failure. In regard to the question of black walnuts, I had some trees twenty years old, and the question was whether I would dig them up or let them grow for timber. I consulted cabinet makers in Janesville and there was not one who would give me any encouragement in growing black walnut for timber for any time in the future. They said they had quit using it and were not going to attempt to use it again. I cut them down and used them for firewood.

The President: The trouble in growing them for timber is that they do not get a rich color until the tree is old. In younger trees the wood is striped in the middle.

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Mr. John Cummins: That is a sample of the walnut in the gavel you are using.

The President: The wood from which this gavel is made was grown from seed by Mr. Cummins. Mr. Cummins is a man who sits still and absorbs things he hears at these meetings, but he does lots of things out at his place.

Mr. Husser: If Mr. Kellogg did not succeed in growing hickory nuts there is some reason. He might have got seed that had no meat in. When I sell nuts for planting purposes I test them. I put them in water and if they come to the top of the water they are not fit for seed, but those that sink are good and will do for planting.

Award of Premiums, Minnesota State Fair, 1910.

APPLES.

(Open to All.)

Peck of Patten's Greening apples: P. H. Perry, Excelsior, $8.84; F. A. Averill, Excelsior, $7.64; A. B. Lyman, Excelsior, $6.86; Carl G. Stellar, Excelsior, $6.66.

Peck of Duchess apples: Carl G. Stellar, Excelsior, $7.45; Thos. Redpath, Wayzata, $6.61; P. H. Perry, Excelsior, $6.44; O. F. Brand & Son, Faribault, $5.78; J. A. Howard, Hammond, $3.72.

Collection of fifteen varieties: P. H. Perry, Excelsior, $12.76; Mrs. S. R. Spates, Wayzata, $12.46; A. B. Lyman, Excelsior, $11.63; J. A. Howard, Hammond, $8.31; Geo. W. Strand, Taylors Falls, $4.84.

Collection of ten varieties: P. H. Perry, Excelsior, $7.60; Carl G. Stellar, Excelsior, $6.56; Mrs. S. R. Spates, Wayzata, $6.40; A. B. Lyman, Excelsior, $6.00; F. J. Butterfield, Long Lake, $5.44; Geo. W. Strand, Taylors Falls, $4.00; J. A. Howard, Hammond, $4.00.

APPLES.

(For Professionals.)

Collection, not to exceed fifty varieties, nor less than thirty varieties: J. A. Howard, Hammond, $65.00; A. B. Lyman, Excelsior, $50.00.

Anis: Carl G. Stellar, Excelsior, $1.00; J. A. Howard, Hammond, $.75.

Antonovka: A. B. Lyman, Excelsior, $1.00; Thos. Redpath, Wayzata, $.75.

Ben Davis: J. A. Howard, Hammond, $1.00.

Brett: Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75.

Borovinca: A. B. Lyman, Excelsior, $1.00; Thos. Redpath, Wayzata, $.75; J. A. Howard, Hammond, $.50.

Christmas: A. B. Lyman, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.

Evelyn: A. B. Lyman, Excelsior, $1.00.

Fameuse: J. A. Howard, Hammond, $1.00.

Gideon: A. B. Lyman, Excelsior, $1.00; J. A. Howard, Hammond, $.75.

Giant Swaar: J. A. Howard, Hammond, $1.00.

Gilbert: A. B. Lyman, Excelsior, $1.00; J. A. Howard, Hammond, $.75.

Golden Russet: J. A. Howard, Hammond, $1.00.

Grundy: J. A. Howard, Hammond, $1.00.

Haas: Carl G. Stellar, Excelsior, $1.00.

Hutchins: J. A. Howard, Hammond, $1.00.

Jewell's Sweet: Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75.

Jewell's Winter: Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75.

Judson: J. A. Howard, Hammond, $1.00.

Lord's L: Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75.

Lowland Raspberry: A. B. Lyman, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.

Milwaukee: Geo. W. Strand, Taylors Falls, $1.00.

Nelson: J. A. Howard, Hammond, $1.00.

Newell's: J. A. Howard, Hammond, $1.00.

Plumb's Cider: A. B. Lyman, Excelsior, $1.00; J. A. Howard, Hammond, $.75.

Red Wine: A. B. Lyman, Excelsior, $1.00.

Rollin's Prolific: J. A. Howard, Hammond, $1.00.

Salome: J. A. Howard, Hammond, $1.00.

Superb: A. B. Lyman, Excelsior, $1.00; J. A. Howard, Hammond, $.75.

Talman Sweet: A. B. Lyman, Excelsior, $1.00.

Utter: A. B. Lyman, Excelsior, $1.00; Thos. Redpath, Wayzata, $.75.

University: Thos. Redpath, Wazvata, $1.00; A. B. Lyman, Excelsior, $.75.

White Pigeon: J. A. Howard, Hammond, $1.00.

Walbridge: J. A. Howard, Hammond, $1.00.

Yahnke: Thos. Redpath, Wayzata, $1.00; A. B. Lyman, Excelsior, $.75.

Yellow Sweet: A. B. Lyman, Excelsior, $1.00.

Yellow Transparent: A. B. Lyman, Excelsior, $1.00.

Anisim: A. B. Lyman, Excelsior, $1.75; J. A. Howard, Hammond, $1.50.

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Charlamoff: A. B. Lyman, Excelsior, $1.75; Thos. Redpath, Wayzata, $1.50; J. A. Howard, Hammond, $1.25; Geo. W. Strand, Taylors Falls, $1.00.
Duchess: Carl G. Stellar, Excelsior, $1.75; A. B. Lyman, Excelsior, $1.50; O. F. Brand & Son, Faribault, $1.25; Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75; Geo. W. Strand, Taylors Falls, $.50.
Hibernal: A. B. Lyman, Excelsior, $1.75; Carl G. Stellar, Excelsior, $1.50; Thos. Redpath, Wayzata, $1.25.
Longfield: Geo. W. Strand, Taylors Falls, $1.75; A. B. Lyman, Excelsior, $1.50; Carl G. Stellar, Excelsior, $1.25; Fred Cowles, West Concord, $1.00; J. A. Howard, Hammond, $.75; Thos. Redpath, Wayzata, $.50.
Malinda: Thos. Redpath, Wayzata, $1.75; A. B. Lyman, Excelsior, $1.50; Carl G. Stellar, Excelsior, $1.25; Geo. W. Strand, Taylors Falls, $1.00.
McMahon: Thos. Redpath, Wayzata, $1.75; J. A. Howard, Hammond, $1.50; O. F. Brand & Son, Faribault, $1.25.
Northwestern Greening: Carl G. Stellar, Excelsior, $1.75; A. B. Lyman, Excelsior, $1.50; Thos. Redpath, Wayzata, $1.25; J. A. Howard, Hammond, $1.00; Fred Cowles, West Concord, $.75.
Okabena: A. B. Lyman, Excelsior, $1.75; J. A. Howard, Hammond, $1.50; Carl G. Stellar, Excelsior, $1.25.
Patten's Greening: Carl G. Stellar, Excelsior, $1.75; A. B. Lyman, Excelsior, $1.50; Geo. W. Strand, Taylors Falls, $1.25; J. A. Howard, Hammond, $1.00.
Peter: Carl G. Stellar, Excelsior, $1.75; A. B. Lyman, Excelsior, $1.50; Geo. W. Strand, Taylors Falls, $1.25; Thos. Redpath, Wayzata, $1.00; J. A. Howard, Hammond, $.75.
Peerless: Thos. Redpath, Wayzata, $1.75; A. B. Lyman, Excelsior, $1.50; O. F. Brand & Son, Faribault, $1.25; J. A. Howard, Hammond, $1.00; Carl G. Stellar, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Wealthy: A. B. Lyman, Excelsior, $1.75; Carl G. Stellar, Excelsior, $1.50; Geo. W. Strand, Taylors Falls, $1.25; Thos. Redpath, Wayzata, $1.00.
Wolf River: Carl G. Stellar, Excelsior, $1.75; J. A. Howard, Hammond, $1.50.

APPLES.

(For Amateurs.)

Collection not to exceed forty nor less than twenty varieties: P. H. Perry, Excelsior, $55.00; Marion Dewitt, Hammond, $40.00.
Anis: F. J. Butterfield, Long Lake, $1.00; Marion Dewitt, Hammond, $.75.
Antonovka: P. H. Perry, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75.
Ben Davis: P. H. Perry, Excelsior, $1.00.
Brett: P. H. Perry, Excelsior, $1.00.
Borovinca: P. H. Perry, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75; Mrs. S. R. Spates, Wayzata, $.50.
Fameuse: Marion Dewitt, Hammond, $1.00.
Gilbert: Marion Dewitt, Hammond, $1.00.
Golden Russet: Marion Dewitt, Hammond, $1.00.
Grundy: Marion Dewitt, Hammond, $1.00.
Haas: P. H. Perry, Excelsior, $1.00.
Hutchins: L. W. Smith, St. Paul, $1.00.
Iowa Beauty: Mrs. S. R. Spates, Wayzata, $1.00; Mrs. I. Barton, Excelsior, $.75.
Jewell's Winter: Mrs. S. R. Spates, Wayzata, $1.00; Marion Dewitt, Hammond, $.75.
Judson: Marion Dewitt, Hammond, $1.00.
Newell's: Marion Dewitt, Hammond, $1.00.
Plumb's Cider: Marion Dewitt, Hammond, $1.00.
St. Lawrence: F. J. Butterfield, Long Lake, $1.00.
Salome: Marion Dewitt, Hammond, $1.00.
Tetofsky: P. H. Perry, Excelsior, $1.00; L. W. Smith, St. Paul, $.75.
Utter: F. A. Averill, Excelsior, $1.00.
University: F. J. Butterfield, Long Lake, $1.00.
White Pigeon: Marion Dewitt, Hammond, $1.00.
Walbridge: Marion Dewitt, Hammond, $1.00.
Yellow Transparent: P. H. Perry, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75.
Anisim: Mrs. S. R. Spates, Wayzata, $1.75; F. A. Averill, Excelsior, $1.50; Marion Dewitt, Hammond, $1.25.
Charlamoff: F. J. Butterfield, Long Lake, $1.75; Mrs. S. R. Spates, Wayzata, $1.50; P. H. Perry, Excelsior, $1.25; L. W. Smith, St. Paul, $1.00.
Duchess: P. H. Perry, Excelsior, $1.75; Wm. Taber, Duluth, $1.50; Mrs. S. R. Spates, Wayzata, $1.25; Marion Dewitt, Hammond, $1.00; F. J. Butterfield, Long Lake $.75; E. H. Veblen, Stillwater, $.50.
Hibernal: Mrs. S. R. Spates, Wayzata, $1.75; P. H. Perry, Excelsior, $1.50; Wm. Taber, Duluth, $1.25; F. A. Averill, Excelsior, $1.00; Marion Dewitt, Hammond, $.75.
Longfield: P. H. Perry, Excelsior, $1.75; F. A. Averill, Excelsior, $1.50; F. J. Butterfield, Long Lake, $1.25; Marion Dewitt, Hammond, $1.00.
Malinda: Frank Stifter, Cokato, $1.75; F. J. Butterfield, Long Lake, $1.50; Ianthe E. Poore, Bird Island, $1.25; Marion Dewitt, Hammond, $1.00.
McMahon: F. A. Averill, Excelsior, $1.75; Marion Dewitt, Hammond, $1.50; F. J. Butterfield, Long Lake, $1.25; P. H. Perry, Excelsior, $1.00; E. H. Veblen, Stillwater, $.75.
Northwestern Greening: Mrs. S. R. Spates, Wayzata, $1.75; P. H. Perry, Excelsior, $1.50.
Okabena: Wm. Taber, Duluth, $1.75; Mrs. S. R. Spates, Wayzata, $1.50; P. H. Perry, Excelsior, $1.25; Marion Dewitt, Hammond, $1.00.

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Patten's Greening: P. H. Perry, Excelsior, $1.75; F. A. Averill, Excelsior, $1.50; L. W. Smith, St. Paul, $1.25.

Peter: P. H. Perry, Excelsior, $1.75; Mrs. S. R. Spates, Wayzata, $1.50; F. J. Butterfield, Long Lake, $1.25; F. A. Averill, Excelsior, $1.00; Marion Dewitt, Hammond, $.75; A. J. Wilwerding, Freeport, $.50.

Peerless: P. R. Simons, Elysian, $1.75; T. A. Simons, Greenland, $1.50; Mrs. S. R. Spates, Wayzata, $1.25; F. A. Averill, Excelsior, $1.00; Tom McNeill, Elysian, $.75; C. N. Smith, Elysian, $.50.

Wealthy: Mrs. S. R. Spates, Wayzata, $1.75; P. H. Perry, Excelsior, $1.50; L. W. Smith, St. Paul, $1.25; F. A. Averill, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75; Marion Dewitt, Hammond, $.50.

Wolf River: P. H. Perry, Excelsior, $1.75; E. H. Veblen, Stillwater, $1.50.

CRABS AND HYBRIDS.

(Open to All.)

Collection ten varieties: P. H. Perry, Excelsior, $4.80; A. B. Lyman, Excelsior, $4.33; Mrs. S. R. Spates, Wayzata, $4.09; Geo. W. Strand, Taylors Falls, $3.63; J. A. Howard, Hammond, $3.15.

Dartt: L. W. Smith, St. Paul, $1.00.

Early Strawberry: P. H. Perry, Excelsior, $1.00; Carl G. Stellar, Excelsior, $.75; Thos. Redpath, Wayzata, $.50; F. J. Butterfield, Long Lake, $.25.

Faribault: P. H. Perry, Excelsior, $1.00.

Florence: P. H. Perry, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75; Carl G. Stellar, Excelsior, $.50; A. B. Lyman, Excelsior, $.25.

Gideon's No. 6: J. A. Howard, Hammond, $1.00.

General Grant: J. A. Howard, Hammond, $1.00.

Hyslop: P. H. Perry, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.

Lyman's Prolific: Carl G. Stellar, Excelsior, $1.00; Mrs. S. R. Spates, Wayzata, $.75; A. B. Lyman, Excelsior, $.50.

Martha: P. H. Perry, Excelsior, $1.00; E. H. Veblen, Stillwater, $.75; Carl G. Stellar, Excelsior, $.50.

Minnesota: P. H. Perry, Excelsior, $1.00; Carl G. Stellar, Excelsior, $.75; A. B. Lyman, Excelsior, $.50.

Montreal Beauty: J. A. Howard, Hammond, $1.00; Harlon Dewitt, Hammond, $.75.

Meader's Winter: Marion Dewitt, Hammond, $1.00; J. A. Howard, Hammond, $.75.

Orange: J. A. Howard, Hammond, $1.00; Marion Dewitt, Hammond, $.75; H. F. Busse, St. Paul, $.50.

Pickett's: J. A. Howard, Hammond, $1.00; Marion Dewitt, Hammond, $.75.

Pride of Minneapolis: F. J. Butterfield, Long Lake, $1.00; Thos. Redpath, Wayzata, $.75; Mrs. S. R. Spates, Wayzata, $.50.

Shields: P. H. Perry, Excelsior, $1.00; H. F. Busse, St. Paul, $.75.

Sweet Russet: P. H. Perry, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.

Tonka: Mrs. S. R. Spates, Wayzata, $1.00; Mrs. I. Barton, Excelsior, $.75; F. J. Butterfield, Long Lake, $.50; Geo. W. Strand, Taylors Falls, $.25.

Transcendent: Carl G. Stellar, Excelsior, $1.00; P. H. Perry, Excelsior, $.75; F. A. Averill, Excelsior, $.50; Mrs. S. R. Spates, Wayzata, $.25.

Virginia: P. H. Perry, Excelsior, $1.00; F. J. Butterfield, Long Lake, $.75; Carl G. Stellar, Excelsior, $.50; F. A. Averill, Excelsior, $.25.

Whitney: Carl G. Stellar, Excelsior, $1.00; Mrs. I. Barton, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50; F. J. Butterfield, Long Lake, $.25.

Seedling Winter Crab: Thos. Redpath, Wayzata, $5.00; A. B. Lyman, Excelsior, $3.00; Geo. W. Strand, Taylors Falls, $2.00.

SEEDLING APPLES.

(Open to All.)

Collection (excluding crabs): T. E. Perkins, Red Wing, $60.00; A. B. Lyman, Excelsior, $30.00; J. A. Howard, Hammond, $10.00.

Summer variety, kept in cold storage: A. B. Lyman, Excelsior, $6.00; T. E. Perkins, Red Wing, $4.00; A. B. Lyman, Excelsior, $2.00; A. B. Lyman, Excelsior, $1.00.

Fall variety, not sweet, never having received a premium at the Minnesota State Fair: Thos. Redpath, Wayzata, $6.00; T. E. Perkins, Red Wing, $4.00; T. E. Perkins, Red Wing, $2.00; J. A. Howard, Hammond, $1.00.

Fall variety, not sweet, open to all: Thos. Redpath, Wayzata, $6.00; A. B. Lyman, Excelsior, $4.00; A. B. Lyman, Excelsior, $2.00; T. E. Perkins, Red Wing, $1.00.

Winter variety, not sweet, never having received a premium at the Minnesota State Fair: A. B. Lyman, Excelsior, $10.00; T. E. Perkins, Red Wing, $8.00; J. A. Howard, Hammond, $4.00; T. E. Perkins, Red Wing, $2.00.

Winter variety, not sweet, open to all: Thos. Redpath, Wayzata, $10.00; A. B. Lyman, Excelsior, $8.00; A. B. Lyman, Excelsior, $4.00; T. E. Perkins, Red Wing, $2.00.

Sweet variety, never having received a premium at the Minnesota State Fair, of such excellent quality as to make it worthy of cultivation, either fall or winter: T. E. Perkins, Red Wing, $6.00; T. E. Perkins, Red Wing, $4.00; P. H. Perry, Excelsior, $2.00.

PLUMS.

(Open to All.)

Best ten named varieties: Geo. W. Strand, Taylors Falls, $20.00.

Collection, not to exceed fifteen varieties: Geo. W. Strand, Taylors Falls, $20.00; A. J. Wilwerding, Freeport, $10.00.

Brittlewood: Geo. W. Strand, Taylors Falls, $1.00.

De Soto: Geo. W. Strand, Taylors Falls, $1.00; A. J. Wilwerding, Freeport,

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$.75; C. F. Nelson, Graham, $.50.
Forest Garden: Geo. W. Strand, Taylors Falls, $1.00.
Hawkeye: Geo. W. Strand, Taylors Falls, $1.00.
New Ulm: Geo. W. Strand, Taylors Falls, $1.00.
Ocheeda: Geo. W. Strand, Taylors Falls, $1.00.
Stoddard: Geo. W. Strand, Taylors Falls, $1.00.
Surprise: Mrs. S. R. Spates, Wayzata, $1.00; Fred Cowles, West Concord, $.75.
Rollingstone: Mrs. S. R. Spates, Wayzata, $1.00.
Terry: Geo. W. Strand, Taylors Falls, $1.00.
Weaver: Mrs. S. R. Spates, Wayzata, $1.00; Geo. W. Strand, Taylors Falls, $.75.
Wolf, Clingstone: Geo. W. Strand, Taylors Falls, $1.00.
Wyant: Fred Cowles, West Concord, $1.00; A. J. Wilwerding, Freeport, $.75; Geo. W. Strand, Taylors Falls, $.50.

SUNDRIES.

Compass Cherry: Mrs. S. R. Spates, Wayzata, $1.00.
Best plate of seedling plums: Thos. Redpath, Wayzata, $5.00; Lewis J. Bedney, Gladstone, $4.00.

GRAPES.

(Open to All.)

Collection not less than ten varieties: F. A. Averill, Excelsior, $20.74; P. H. Perry, Excelsior, $18.44; Mrs. I. Barton, Excelsior, $10.39; Geo. W. Strand, Taylors Falls, $8.09; A. J. Wilwerding, Freeport, $2.34.
Agawam (Roger's No. 15): F. A. Averill, Excelsior, $1.00; P. H. Perry, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Aminia (Roger's No. 39): P. H. Perry, Excelsior, $1.00; F. A. Averill, Excelsior, $.75.
Brighton: F. A. Averill, Excelsior, $1.00; P. H. Perry, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Cottage: F. A. Averill, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.
Campbell's Early: F. A. Averill, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75; A. J. Wilwerding, Freeport, $.50.
Duchess: F. A. Averill, Excelsior, $1.00.
Early Victor: Mrs. I. Barton, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75.
Empire State: P. H. Perry, Excelsior, $1.00.
Green Mountain: Mrs. I. Barton, Excelsior, $1.00; P. H. Perry, Excelsior, $.75.
Herbert (Roger's No. 44): Geo. W. Strand, Taylor Falls, $1.00.
Iona: F. A. Averill, Excelsior, $1.00.
Janesville: P. H. Perry, Excelsior, $1.00.
Lindley (Roger's No. 9): P. H. Perry, Excelsior, $1.00.
Lady: P. H. Perry, Excelsior, $1.00; F. A. Averill, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Martha: F. A. Averill, Excelsior, $1.00.
Massasoit (Roger's No. 3): P. H. Perry, Excelsior, $1.00.
Moore's Diamond: F. A. Averill, Excelsior, $1.00; Geo. W. Strand, Taylors Falls, $.75; A. J. Wilwerding, Freeport, $.50.
Niagara: F. A. Averill, Excelsior, $1.00; P. H. Perry, Excelsior, $.75; B. T. Hoyt, St. Paul, $.50.
Pocklington: Mrs. I. Barton, Excelsior, $1.00; F. A. Averill, Excelsior, $.75; P. H. Perry, Excelsior, $.50.
Telegraph: F. A. Averill, Excelsior, $1.00; Mrs. I. Barton, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Wilder (Roger's No. 4): P. H. Perry, Excelsior, $1.00; F. A. Averill, Excelsior, $.75.
Woodruff Red: Mrs. I. Barton, Excelsior, $1.00; F. A. Averill, Excelsior, $.75; P. H. Perry, Excelsior, $.50.
Worden: P. H. Perry, Excelsior, $1.00; Mrs. I. Barton, Excelsior, $.75; F. A. Averill, Excelsior, $.50.
Wyoming Red: F. A. Averill, Excelsior, $1.00; P. H. Perry, Excelsior, $.75; Geo. W. Strand, Taylors Falls, $.50.
Beta: A. J. Wilwerding, Freeport, $1.50; Geo. W. Strand, Taylors Falls, $1.25; F. A. Averill, Excelsior, $1.00.
Concord: Carl G. Stellar, Excelsior, $1.50; Mrs. K. Hobrecker, St. Paul, $1.25; P. H. Perry, Excelsior, $1.00.
Delaware: F. A. Averill, Excelsior, $1.50; P. H. Perry, Excelsior, $1.25; Geo. W. Strand, Taylors Falls, $1 00.
Moore's Early: F. A. Averill, Excelsior, $1.50; P. H. Perry, Excelsior, $1.25; Mrs. I. Barton, Excelsior, $1.00; B. T. Hoyt, St. Paul, $.75.

SEEDLING GRAPE.

Single variety: Frank Stifter, Cokato, $3.00.

PLANTS AND FLOWERS.

(For Professionals.)

Decorative Plants.

Collection of decorative plants: Holm & Olson, St. Paul, $48.90; Minneapolis Floral Co., Minneapolis, $43.45; August S. Swanson, St. Paul, $43.39; John Vasatka, Minneapolis, $29.26.
Kentia Palm: Holm & Olson, St. Paul, $10.00; August S. Swanson, St. Paul, $8.00; John Vasatka, Minneapolis, $6.00; Minneapolis Floral Co., Minneapolis, $4.00.
Latania Palm: August S. Swanson, St. Paul, $10.00; Holm & Olson, St. Paul, $8.00; Minneapolis Floral Co., Minneapolis, $6.00.
Phoenix Canariensis: Holm & Olson, St. Paul, $10.00; Minneapolis Floral Co., Minneapolis, $8.00.

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Phoenix, any other variety: Holm & Olson, St. Paul, $10.00; Minneapolis Floral Co., Minneapolis, $8.00.

Pandanus Veitchi: Holm & Olson, St. Paul, $10.00; Minneapolis Floral Co., Minneapolis, $8.00.

Any other decorative plant: Holm & Olson, St. Paul, $10.00; August S. Swanson, St. Paul, $8.00; Minneapolis Floral Co., Minneapolis, $6.00; John Vasatka, Minneapolis, $4.00.

Pair Bay trees, standard: Minneapolis Floral Co., Minneapolis, $10.00; Holm & Olson, St. Paul, $8.00; August S. Swanson, St. Paul, $6.00.

Pair Box trees, Pyramid: Minneapolis Floral Co., Minneapolis, $10.00; Holm & Olson, St. Paul, $8.00; August S. Swanson, St. Paul, $6.00.

Boston Fern: Minneapolis Floral Co., Minneapolis, $10.00; Holm & Olson, St. Paul, $8.00; Hiawatha Gardens Co., Minneapolis, $6.00; August S. Swanson, St. Paul, $4.00.

Fern, crested Nephrolepis: Holm & Olson, St. Paul, $10.00; August S. Swanson, St. Paul, $8.00; Hiawatha Gardens Co., Minneapolis, $6.00; John Vasatka, Minneapolis, $4.00.

Fern, any variety: Minneapolis Floral Co., Minneapolis, $10.00; Holm & Olson, St. Paul, $8.00; August S. Swanson, St. Paul, $6.00.

Ferns, six distinct varieties: Holm & Olson, St. Paul, $10.00; August S. Swanson, St. Paul, $8.00; Hiawatha Gardens Co., Minneapolis, $6.00; Minneapolis Floral Co., Minneapolis, $4.00.

Ferns, two hanging baskets: August S. Swanson, St. Paul, $10.00; Holm & Olson, St. Paul, $8.00; Minneapolis Floral Co., Minneapolis, $6.00; John Vasatka, Minneapolis, $4.00.

Fern dish, filled: Holm & Olson, St. Paul, $3.00; Minneapolis Floral Co., Minneapolis, $2.50; Hiawatha Gardens Co., Minneapolis, $2.00; John Vasatka, Minneapolis, $1.50.

Fifteen fancy leaved Caladiums: Holm & Olson, St. Paul, $10.00.

Twelve Coleus, not less than six varieties: Holm & Olson, St. Paul, $5.00; John Vasatka, Minneapolis, $4.00.

Six Coleus, not less than three varieties: Hiawatha Gardens Co., Minneapolis, $3.00; Holm & Olson, St. Paul, $2.00; John Vasatka, Minneapolis, $1.00.

BLOOMING PLANTS.

Begonias, twelve: Holm & Olson, St. Paul, $10.00; Hiawatha Gardens Co., Minneapolis, $8.00; John Vasatka, Minneapolis, $6.00.

Begonias, six: Holm & Olson, St. Paul, $5.00; John Vasatka, Minneapolis, $4.00.

Twelve Lilies, not less than three varieties: John Vasatka, Minneapolis, $10.00.

Twenty-four Geraniums, not less than six varieties: John Vasatka, Minneapolis, $10.00.

Thirteen Geraniums, not less than three varieties: John Vasatka, Minneapolis, $5.00.

Twelve Roses: Holm & Olson, St. Paul, $10.00; Minneapolis Floral Co., Minneapolis, $8.00.

CUT FLOWERS.

American Beauty Roses: August S. Swanson, St. Paul, $5.00.

Richmond Roses: Minneapolis Floral Co., Minneapolis, $5.00; August S. Swanson, St. Paul, $4.00.

Killarney Roses: August S. Swanson, St. Paul, $5.00; Minneapolis Floral Co., Minneapolis, $4.00.

Kaiserin Roses: Minneapolis Floral Co., Minneapolis, $5.00.

White Killarney Roses: August S. Swanson, St. Paul, $5.00; Minneapolis Floral Co., Minneapolis, $4.00.

Roses, any other variety: August S. Swanson, St. Paul, $5.00; Minneapolis Floral Co., Minneapolis, $4.00.

Gladioli Spikes, one variety: Holm & Olson, St. Paul, $6.00; Minneapolis Floral Co., Minneapolis, $5.00.

Hydrangea Paniculata Grandiflora: Holm & Olson, St. Paul, $4.00; B. T. Hoyt, St. Paul, $3.00.

FLORAL DESIGNS.

Basket, cut flowers; Holm & Olson, St. Paul, $20.00; Minneapolis Floral Co., Minneapolis, $15.00; August S. Swanson, St. Paul, $10.00; R. A. Latham, Minneapolis, $6.00.

Table decoration: August S. Swanson, St. Paul, $48.60; Holm & Olson, St. Paul, $42.60; Minneapolis Floral Co., Minneapolis, $30.20; R. A. Latham, Minneapolis, $23.60.

Floral wreath on easel, not to exceed twenty-four inches: Minneapolis Floral Co., Minneapolis, $25.00; Holm & Olson, St. Paul, $20.00; August S. Swanson, St. Paul, $15.00.

Panel design, not to exceed thirty square feet: Holm & Olson, St. Paul, $50.00; August S. Swanson, St. Paul, $40.00; R. A. Latham, Minneapolis, $30.00.

CUT FLOWERS—CULTIVATED.

(For Amateurs.)

Asters, twenty-five blooms, one color: F. F. Farrar, White Bear, $2.00; Frank Moris, Lake Elmo, $1.50; A. R. Hildreth, Bald Eagle, $1.00.

Aster, largest flower, any color; E. A. Farmer, Minneapolis, $1.00.

Dahlias, one hundred blooms, not less than ten varieties: D. W. C. Ruff, St Paul, $8.00.

Dahlias, fifty blooms, not less than ten varieties: D. W. C. Ruff, St. Paul, $4.00

Dahlias, collection of three flowers each, separate vases: D. W. C. Ruff, St Paul, $8.00.

Dahlias, vase twelve blooms, single: D. W. C. Ruff, St. Paul, $2.00.

Dahlias, vase, twelve blooms, cactus: D. W. C. Ruff, St. Paul, $2.00.

Dahlias, vase, twelve peony-flowered: D. W. C. Ruff, St. Paul, $2.00.

Dahlias, vase, twelve decorative: D. W. C. Ruff, St. Paul, $2.00; F. F. Farrar White Bear, $1.50.

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Dahlias, vase, twelve pompon: D. W. C. Ruff, St. Paul, $2.00.
Dahlias, vase, twelve quilled: D. W. C. Ruff, St. Paul, $2.00.
Dahlia, largest flower, any color: D. W. C. Ruff, St. Paul, $1.00.
Gladioli, vase, fifty blooms: D. W. C. Ruff, St. Paul, $8.00; Frank Moris, Lake Elmo, $6.00; Mrs. H. B. Tillotson, Eureka, $4.00.
Gladioli, vase, twenty-five blooms: D. W. C. Ruff, St. Paul, $4.00; Mrs. John A. Gantzer, St. Paul, $3.00; Mrs. H. B. Tiliotson, Eureka, $2.00; Mrs. Chas. Krause, St. Paul, $1.00.
Gladioli, vase, twelve blooms, any variety: D. W. C. Ruff, St. Paul, $3.00; E. A. Farmer, Minneapolis, $2.00; F. F. Farrar, White Bear, $1.50; Mrs. John A. Gantzer, St. Paul, $1.00.
Hydrangea Paniculata Grandiflora, twelve blooms: D. W. C. Ruff, St. Paul, $4.00.
Collection of Annual Phlox: Frank Moris, Lake Elmo, $1.50; Mrs. G. W. Brown, St. Louis Park, $1.00; Mrs. John A. Gantzer, St. Paul, $.50.
Collection of Perennial Phlox: E. A. Farmer, Minneapolis, $2.00; Wyman Elliot, Minneapolis, $1.50; D. W. C. Ruff, St. Paul. $1.00.
Collection of Cosmos: Frank Moris, Lake Elmo, $2.00; Mrs. J. W. Casson, White Bear, $1.50; D. W. C. Ruff, St. Paul, $1.00.
Collection of Marigolds: Mrs. J. F. Fairfax, Minneapolis, $1.50; Mrs. Chas. Krause, St. Paul, $1.00.
Collection of Zinnias: Mrs. G. W. Brown, St. Louis Park, $2.00; Frank Moris, Lake Elmo, $1.50; Mrs. Chas. Krause, St. Paul, $1.00.
Collection of Dianthus: Frank Moris, Lake Elmo, $1.50; E. D. Fuller, Minneapolis, $1.00; Mrs. Chas. Krause, St. Paul, $.50.
Collection of Sweet Peas: A. B. Hostetter, Duluth, $2.00; D. W. C. Ruff, St. Paul, $1.50; E. A. Farmer, Minneapolis, $1.00.
Collection of Nasturtiums: D. W. C. Ruff, St. Paul, $1.50; Mrs. G. W. Brown, St. Louis Park, $1.00; Mrs. Chas. Krause, St. Paul, $.50.
Collection of Celosia: Mrs. F. H. Gibbs, St. Paul, $2.00; Mrs. John A. Gantzer, St. Paul, $1.50.
Collection of Salpiglossis: Frank Moris, Lake Elmo, $1.50; D. W. C. Ruff, St. Paul, $1.00; Mrs. J. A. Steele, White Bear, $.50.
Collection of Salvia: Mrs. J. F. Fairfax, Minneapolis, $1.50; Mrs. G. W. Brown, St. Louis Park, $1.00; Mrs. J. W. Casson, White Bear, $.50.
Collection of Snapdragons: Frank Moris, Lake Elmo, $2.00; D. W. C. Ruff, St. Paul, $1.50; Mrs. F. H. Gibbs, St. Paul, $1.00.
Collection of Centaurea: Frank Moris, Lake Elmo, $1.50; Mrs. Chas. Krause, St. Paul, $1.00.
Collection of Marguerite Carnations: Mrs. Chas. Krause, St. Paul, $1.50; Lena Krause, St. Paul, $1.00; Mrs. F. H. Gibbs, St. Paul, $.50.
Collection of ornamental grasses: Mrs. E. Gould, Minneapolis, $3.00; Daniel Gantzer, St. Paul, $2.00.
Collection of annuals, not less than fifteen varieties: Mrs. Chas. Krause, St. Paul, $4.33; Mrs. H. A. Boardman, St. Paul, $4.14; Mrs. J. A. Steele, White Bear, $3.56; Frank Moris, Lake Elmo, $3.56; Mrs. G. W. Brown, St. Louis Park, $3.44; Mrs. J. F. Fairfax, Minneapolis, $3.05; Mrs. J. W. Casson, White Bear, $2.92.
Collection of perennials, not less than ten varieties: Mrs. E. Gould, Minneapolis, $5.76; Mrs. Chas. Krause, St. Paul, $5.73; Geo. W. Strand, Taylors Falls, $5.73; E. A. Farmer, Minneapolis, $5.57; Frank Moris, Lake Elmo, $3.93; Mrs. H. A. Boardman, St. Paul, $3.28.
Collection of wild flowers: Daniel Gantzer, St. Paul, $5.37; Frank Moris, Lake Elmo, $4.74; Mrs. F. H. Gibbs, St. Paul, $4.42; Lena Krause, St. Paul, $4.12; Mrs. Chas. Krause, St. Paul, $3.49; Mrs. John A. Gantzer, St. Paul, $2.86.
Basket, not to exceed twelve inches in diameter: D. W. C. Ruff, St. Paul, $5.00; Mrs. J. A. Steele, White Bear, $4.00; Mrs. J. W. Casson, White Bear, $3.00; Mrs. H. A. Boardman, St. Paul, $2.00.
Table decoration: Mrs. J. W. Casson, White Bear, $7.38; Mrs. J. A. Steele, White Bear, $7.27; Mrs. E. Gould, Minneapolis, $6.70; Mrs. F. H. Gibbs, St. Paul, $6.34; Mrs. Chas. Krause, St. Paul, $5.77; Daniel Gantzer, St. Paul, $5.77; Mrs. H. A. Boardman, St. Paul. $5.77.

CUT FLOWERS.

(Open only to members of some floral society, exhibitors to receive one-half of the amount of premiums taken, and one-half paid to the secretary of the society named.)

Collections of cut flowers, each variety in a separate vase: The Minnesota State Rose Society (Mrs. F. H. Gibbs, secretary, St. Paul), $40.00; Frank Moris, Lake Elmo, $5.44; E. A. Farmer, Minneapolis, $5.39; Mrs. H. A. Boardman, St. Paul, $5.20; Mrs. H. B. Tillotson, Eureka, $4.66; Mrs. John A. Gantzer, St. Paul, $4.47; Mrs. Chas. Krause, St. Paul, $4.18; B. T. Hoyt, St. Paul, $3.94; E. D. Fuller, Minneapolis, $3.74; Mrs. E. Gould, Minneapolis, $2.98.
Collection of outdoor roses, three roses of each variety shown in a separate vase: The Minnesota State Rose Society (Mrs. F. H. Gibbs, secretary, St. Paul), $3.16; The State Florists' Society, (Theo. Wirth, president, Minneapolis), $4.34; E. Meyer, Minneapolis, $4.34; B. T. Hoyt, St. Paul, $2.29; Mrs. H. B. Tillotson, Eureka, $.87.

WILD FLOWERS.

(Open to All.)

Bouquet of wild flowers: Daniel Gantzer, St. Paul, $3.01; Mrs. F. H. Gibbs, St. Paul, $2.86; Mrs. Chas. Krause, St. Paul, $2.63; Miss Bessie Perry, Excelsior, $2.41; Mrs. E. Gould, Minneapolis, $2.33; Mrs. John A. Gantzer, St. Paul, $2.17; Lena Krause, St. Paul, $2.17; Alvin Weidt, St. Paul, $2.10; Henry Husser, Minneiska, $1.95; Mrs. P. H. Dahners, St. Paul, $1.87; E. H. Veblen, Stillwater, $1.50.

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SECRETARY'S CORNER

THE "IN MEMORIAM" NUMBER.—The September number of our monthly is devoted altogether to the memory of our lamented president, Sam'l B. Green. In anticipation of an unusual call for copies of this number of the monthly, several hundred extra copies were printed, so that members desiring them for use at home or to send abroad can be accommodated to a considerable extent. Any to be sent to a distance may be mailed directly from this office without expense to the member by sending to the secretary the name and address of the party to whom it is to be forwarded.

PROGRAM OF THE ANNUAL MEETING.—The members may well plan at this early date for attendance at the annual meeting of the society, to be held in Minneapolis Dec. 6th. to 9th., a four days' session. The program is in the process of making, and will be, as usual, a very diversified one, something of interest to all, many "question and answer" exercises, demonstrations in spraying, grafting, packing of apples, etc., lantern slide lectures on a number of practical and interesting subjects, and instructive and entertaining papers and addresses on a great variety of topics. More time than usual will be given to the trial station reports, which are always full of useful suggestions. An unusual amount of time will be allotted for discussion. Save up the questions that you would like to ask on any horticultural subject, and there will be some place in the meeting where they will fit in. Plan ahead to visit Minneapolis for any business you may have in mind, and be with us at the time of the annual gathering. It will be a rich occasion for all.

Are there any subjects that members would like especially to have taken up at the annual meeting? If so, it will be well to communicate with the secretary.

PREMIUMS, ANNUAL MEETING, 1910.—In offering premiums on fruit, etc. at the coming annual meeting of the society, it has been decided to make only slight changes from last year's list, which list can be found on page No. 479 of the last annual report of the society, of which each member should have a copy. The premiums on apples of all classes are the same as last year, except that the premium offered for pecks of apples has been reduced from $30 to $15, a premium is offered on bushel boxes of apples of $25 for any variety, including seedlings and no special premium is offered for boxes of Wealthy apples. Premiums on seedling apples remain the same as last year. On nuts the premiums are doubled to what they were last year. Premiums on grapes remain the same.

Notwithstanding the unfortunate season we are hoping for a large display of fruit, approximating at least the amount that has been shown the last two years. We are assured of the assistance of all the regular exhibitors as far as lies within their power, and hope to receive considerable assistance also from many who have not heretofore been in the practice of exhibiting. If you can bring only a single plate of apples, even if it is not of a variety that is likely to win a prize, you will, I am sure, wish to do so to help the exhibition to that extent, and your interest in the meeting for having done a little something for it will be all the greater. Any fruit you wish to show which you cannot keep at home can be sent to Minneapolis and placed in cold storage here by applying to the secretary for necessary cold storage tags and directions for shipment.

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WM. L. PARKER,
Late of Farmington, Minn.
(See opposite page.)
From photo taken in 1906.

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THE MINNESOTA HORTICULTURIST

Vol. 38 NOVEMBER, 1910. No. 11

IN MEMORIAM

William Lorenzo Parker

Passed, May 6, 1910, aged sixty-four years.

The subject of this memorial sketch endeared himself personally to the writer at first by a very loyal service which he performed as assistant in connection with the horticultural exhibit made by the State of Minnesota at the Columbian Exposition, held in Chicago in 1893. The writer was there as superintendent at the request of the executive board of this society, and was fortunate indeed in securing the services of Mr. Parker, with whom, however, there had been a previous warm acquaintance. During four months of the time the fair was open Mr. Parker remained with the exhibit, during much of which period the writer was away. His splendid service at that time has never been forgotten, and the friendship which grew up between us then has ripened with the years until now that we are called to part in this life there is a distinct and marked personal loss, aside from the loss that is entertained from his removal from the field of action in connection with the society, which he so well occupied.

For many years after the world's fair referred to, Mr. Parker occupied the position of assistant to the writer also in connection with the horticultural exhibit at the state fair. His practical knowledge of fruit growing, acquired in connection with the development and care of his extensive orchard, and his interest in the work, made his assistance in this capacity invaluable. He also willingly gave us the benefit of his knowledge in this direction for many years in connection with the fruit exhibits at the annual meetings of the society, and filling these various capacities he became personally acquainted with a large number of the membership of the society, who, in common with the writer, sincerely mourn his loss.

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Mr. Parker was at the time of his death sixty-four years of age, his age being the same as that of the writer. He was born in Mantua, Ohio, June 5, 1846. We have no record of his early life up to the time that he enlisted as a soldier in the service of the government in 1864, serving in various places of responsibility during the last year of the Civil War.

In 1872 he was united in marriage to Miss Alice G. Messenger, of Minneapolis. As a result of this union three children were born, two of whom, with the widow, still survive; a daughter, Mrs. C. G. Cogelow, is living at Great Falls, Mont., and a son, Paul, is now living with his mother on the home place in Castle Rock, three miles south of Farmington, Minn. "Shady Nook Farm" is the pleasing name that they gave their pleasant orchard home, and as Mr. Parker was not only a lover of fruit but also of flowers as well, the writer found it in a visit there some time since a restful and homelike spot indeed. Located in a region where a number of our more valued members had succeeded in developing considerable fruit interests—among whom may be mentioned the late Ditus Day and his brother, Levi Day, and the late D. F. Akin, all of whom were considerable exhibitors in connection with the horticultural exhibit at the state fair—Mr. Parker at once upon making his home there began to plant fruit, year by year adding thereto until he had probably as large a collection of hardy and semi-hardy varieties of apples as any grower in Minnesota. As he knew how to handle fruit carefully and well, he was early interested in exhibiting it at the state fair and other places, and was of very large assistance in making those notable exhibits, which for many years have been a feature of our state fairs. His last exhibit was made in the year 1908, failing health having prevented his attendance with us at the last annual exhibition.

Mr. Parker was a valuable man in the community in which he lived, occupying many places of trust, always a clean, wholesome character, exercising his influence always for good, in every way making for highest citizenship. He became a member of this society in 1883, maintaining his membership continuously thereafter until the time of his death. That his name does not appear upon the honorary life membership roll of the society is purely an oversight, as he long ago earned such honorable recognition, and that he failed to receive it is now a cause of much regret to the writer.

In this number of our monthly will be found an article on the "Exhibition of Fruits," which Mr. Parker had prepared at the request of the writer. His large and successful experience in this direction made the subject one that he could handle with success, and this con-

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tribution I commend especially to those who are interested in exhibiting fruit at our state or county fairs. It came into the hands of the writer only since his death through the kindness of Mrs. Parker. Mr. Parker has given us a number of valuable contributions along the line of orcharding, which have appeared in various issues of our reports. At the time of his death he was vice-president of the society, representing the Third Congressional District.—Secy.

The Exhibition of Fruit.

W. L. PARKER, FARMINGTON.

As I have been an exhibitor for a good many years I have had some experience as to the methods of getting up exhibits and the fruits that are to be exhibited. What should be aimed at on such occasions is the instruction of the public and the betterment of the exhibitions themselves. Our exhibits should be educational in their character, and they can be made so if the proper interest is taken by the fruit growers, farmers and others interested. I am not in favor of large miscellaneous exhibits. Our sweepstake collections, for instance, allow any one to gather specimens where he pleases, and no matter whether he grows an apple or not he is allowed to compete with the man who grows the fruit. It also gives a chance, if the exhibitor is so inclined, to use the specimens so gathered for other purposes. (I hope we have no such exhibitors.) What we want to know is that the fruit shown is grown by the exhibitor. We want good exhibits and honest competition. I am in favor of making other classes of exhibits and so offer the prizes as to bring together and into competition the different ideas of the exhibitors as to the best varieties for various uses for the different seasons of maturity: for instance, a collection of five varieties of winter apples, which of course would be from different sections of the state. The exhibitors would each have a chance to show their judgment as to what varieties are best for their locality. Other collections could be made up with the different ideas of the exhibitors, which would be both profitable and interesting to the public and to the exhibitor.

Now as to the requirements in making exhibits: First, you should procure a premium list and note the classes you can make entries in and then go to work to get the fruit ready. A good many varieties of fruit to be exhibited should have the best possible opportunities for development. This will require some work, the thinning of fruit and more or less pruning in order to give the fruit a chance

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to mature and color. Color is one of the main factors on an exhibition table. Uniformity of specimens is very important. The overgrown specimens are not wanted, but fair sized fruit of even form and color, of the proper type of the variety shown, make good plates for exhibition. They show to much better advantage than uneven specimens. Freedom from blemishes should be insisted upon. A fruit injured by insects, disease or any other cause should be discarded.

The early varieties would have to be sent to cold storage in order to exhibit them. Pick your fruit before too ripe, wrap carefully, pack and send to cold storage the day it is picked. This is important.

As to their ripening and qualities: In collecting specimens for your different exhibits have your mind made up as to the number of specimens required for all your different entries, then pick enough for all and keep on until you have filled your list, keeping the different varieties separate. Now carefully wrap and put the required number of specimens into a sack and mark the name of the variety and class to be exhibited in, keeping each collection or single plates by themselves and pack in the same manner. Then when you get to the place to exhibit your fruit it is put in place very quickly, for you have more time at your homes than at the place of exhibition. I also think a score card should be put on each collection, and the judges should fill out the same for the use of the exhibitor, and then he can see where he failed to receive premiums, and it would help in the defects.

As to our plum exhibit I would say sort out the smaller varieties and give us size and quality in place of quantity; it would be more satisfactory to the public and more interesting to the exhibitors. It would have a tendency to improve the plums. What is most important in my estimation is honesty in every detail of the exhibition. It is then interesting and instructive.

MIXING VARIETIES OF APPLES.—Orchardists have been very slow to realize the necessity of mixing varieties of apples. We have known that the apple is what is called a perfect blossom; that is, it has both the pistils and stamens, and so is supposedly capable of setting fruit. Then, too, the necessity of mixing varieties has been increasing with the passing years. At the time the present commercial orchards were planted, even solid blocks of one variety produced bountiful crops at least every other year, or nearly so. Since then the conditions have gradually changed.

The size of the orchards has been increased, while the number of varieties has been reduced in many commercial orchards to one variety, the soil has become more depleted, and insects and fungi have greatly increased. The mixing of varieties is not the only need, but is one of the most important needs of the orchard today.

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Commercial Apples and Getting Them to Market.

D. W. LONGFELLOW, COMMISSION MERCHANT, MINNEAPOLIS.

Mr. President and Gentlemen: I feel considerably embarrassed in appearing here because you know more about the subject upon which I am to speak than I do. I feel somewhat like a friend of mine, a doctor, who was riding out in the country and saw a group of farmers' boys near a house on the road which he was traveling. Drawing near, he saw a lean, lank, hungry specimen of a boy displaying some tricks which he had taught to his pony. The pony would stand up on his hind legs and ask for candy; he would ask the pony if he liked to work and he would shake his head, and he did a number of other tricks of a like nature. My friend, the doctor, approached the group and said to the boy who owned the pony:

"How did you teach the pony to do those tricks? This horse I have here is an intelligent horse, and I tried to teach him for two years, but I have not been able to teach him a single trick."

The boy replied, "Naw, yer cain't teach a hoss anythin' unless yer know more than the hoss." (Laughter.)

The first point I want to touch upon is in regard to the great number of varieties of apples you find on your list. I believe if you are raising apples for commercial purposes, if you are raising them for the purposes of revenue, you will find it well to confine yourselves to a few varieties. During the experimental stage, while you were seeking to find the apple best adapted to our state, it was, of course, necessary to originate and experiment with a great many different varieties, but when you have settled upon the varieties best adapted to this state and to our climate and soil, stick to a few varieties. A few varieties are the most satisfactory and bring the most money. For instance, if we want a car of Ben Davis or if we want a hundred cars of Ben Davis, we go to Missouri. If we want fifty or one hundred cars of Baldwin or Rhode Island Greenings, we go to the sections where we know they are grown, and we get a hundred straight cars of Baldwin or whatever the apple may be. These sections have found out the apple best suited to their district; they have achieved remarkable financial results, and I advise you to follow their example. We have very good apples in the Duchess and the Wealthy, and other good varieties of apples such as the Okabena, Northwestern Greening, Patten Greening and a number of others, but when you are planting an orchard for commercial returns confine yourselves to a very few varieties.

Now if you have your varieties selected and your orchard planted, take good care of your trees, and you will have fruit on your trees.

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Spray your trees. I don't know what kind of spray you should use, but Prof. Washburn here can tell you. You cannot raise apples successfully in an orchard which is given over more or less to the propagation of bugs and other things of that nature; you have got to kill those bugs, or you cannot raise apples successfully and secure satisfactory returns. So my advice is to spray your trees and keep the bugs and insects down.

Now, in effect we have sprayed the trees and brought them to maturity. The next thing you want to know is what kind of packages to ship your apples in. Here you have a great choice. You can use a nice barrel, you can use a vinegar keg, cranberry barrels, boxes, gunnysacks, drygoods boxes, and many other kinds of packages and receptacles. I know that you have a large choice, because this past season we have had apples shipped in in all those varieties of packages I mention. (Laughter.) Get a nice, clean apple barrel made to hold three bushels, select your apples carefully, pack the apples in that barrel, and prepare them in that way for the market. The apple is called the "king of fruits," and when you send a king out on a journey, you don't want to dress him in a shabby garment. Put him in a clean, bright garment when you send him out, and he will win his way everywhere he goes.

Now, as to the quality of the fruit to be put into the package. Here I want to advise you to secure an accessory to apple growing in every orchard—I want to see a pig pen nearby. The pig is not the most beautiful bird in the world, and he has not the sweetest voice, but as an adjunct to the apple orchard he is an extremely valuable feature. No matter how you spray your trees, some of your apples are going to be imperfect, and I simply want to show you one of the ways in which this can be averted. I want to show you how some of these barrels are packed with apples. I hold in my hand two apples. This is a very good apple (indicating), and you can see that this is not (indicating); these came right out of the same barrel, but this large one was on the face of the barrel, and this other one was a little further in. (Laughter.) There were not a few of them, but there were a whole lot of them. Now, let us see what the result is. The man who had these apples shipped ten barrels, and in those ten barrels there were three barrels we had to sort. He has paid freight on three extra barrels, he paid storage on them, and when they came in the apples were a drug on the market. He has had to pay three months' storage, which amounts to 32 cents, and the freight charges were 65 cents a barrel. These three barrels of small apples were a dead loss to him. Now, supposing he had fed these three barrels to pigs; he could have sold

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those pigs a little later for $7.50 a hundred, and he would have had a valuable product instead of wasting so much money in sending them to market and getting nothing for his apples. We cannot sell them to peddlars, we cannot sell them to any one, we cannot give them away, and so they are a complete loss.

Now, as to markets. You who live near the market can bring your apples in here and market them readily to commission merchants, and you who live further away can ship them here at a small expense, and you can probably find a market for all the apples grown in the state of Minnesota—and the time is coming when you will raise more apples than the two million people will consume. You have got to go farther away, you have got to reach to North Dakota, to find a market for your apples, and then you want to go across the Canadian border, and in that event you must see that the tariff is removed to the extent that Canada may become a profitable market for your apples. I believe in the protection of home industry. I do not believe you need the protection of the tariff to keep out the Canadian apples, but what you need is to get the tariff on apples so adjusted that as the years go by you will have more of a market in Canada for your apples.

Mr. H. U. Beebe: Why do commission men object to boxes, and why is it not best to crate apples in such crates as they are shipped in from the West?

Mr. Longfellow: Practically, the commission man does not object to the bushel box. We are striving to find out what our customers want, and if we find it is easier to sell apples in a package than it is in a barrel, we will sell them in a package, but so far we have not been able to educate them.

Mr. Husser: Don't some of them prefer them in boxes?

Mr. Longfellow: Yes, some do.

Mr. Husser: Don't they sell better in boxes than they do in barrels?

Mr. Longfellow: Well, no, I don't think so, although some prefer them in boxes.

Mr. Husser: If you were asked to pick out the four best apples for market varieties for Minnesota, to which four would you give the preference, running from early, medium early, medium late, to late?

Mr. Longfellow: For an early apple, the Duchess is the best, and for a medium apple that comes a little later, the Wealthy and the two Greenings I have mentioned,—the Northwestern and the Patten Greening. I have also mentioned the Okabena, which is a good apple, and comes into the market a little later than the Duchess.

Mr. Sahler: How is the Malinda?

Mr. Longfellow: That is good, but let me tell you too many varieties are not going to build up your apple market. The Malinda is a good apple, but I want to tell you that a straight car of Wealthy will

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bring more money than another car of ten varieties of equally good apples.

Mr. Probstfeld: What about the Hibernal?

Mr. Longfellow: If I had an orchard of Hibernal, I would dig them out.

Mr. Probstfeld: I had a letter from a man up in the woods who raised 700 bushels of Hibernal, but he did not tell me what he did with them.

Mr. Longfellow: I would not raise the Hibernal, and if I had an orchard of them, I would dig them up and set out something else.

Mr. Sahler: Why not graft them with the Wealthy?

Mr. Longfellow: That would be all right.

Mr. Husser: As between the Patten Greening and the Northwestern Greening, which would you give the preference?

Mr. Longfellow: I think possibly the Northwestern Greening is a little the better keeper.

JOHN TURNBULL,
Late of La Crescent, Minn.

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The Iris.

C. S. HARRISON, NURSERYMAN, YORK, NEB.

This flower was named from the goddess Iris of mythology. She was the rainbow personified. Imagination clothed her in marvelous beauty. Tradition has it that the goddess married Zephyrus and became the mother of Eros, also called Cupid. So you see beauty and love are closely allied.

It is singular how this great and lovely family have been hitherto ignored. There are 170 native varieties besides numerous hybrids which probably swell the number to about 1,000 kinds.

The phlox was like a wild Indian maiden—taken over to Europe, placed under the skill of the florist and returned to us in garments worthy of the courts of kings. And marvelous improvements are yearly being made.

The dahlia grew from the single flower sent to Europe by Prof. Dahl. The modern carnation has been evolved from an insignificant plant. The peony has put on such radiant forms her old grandmother could hardly recognize her.

The iris is also undergoing great changes. In England men have been for years patiently evolving new forms of loveliness. Many of these varieties are of radiant beauty, almost ethereal—so winsome and attractive you are irresistibly drawn to them. They throw a spell of fascination over you. The standards may have one color and the falls another. The colors are always in harmony. They are rayed and veined with the most delicate tracery and interweaving of various tints and colors. How did the great Artist contrive to put so much allurement in a single flower? You look into one, and you have the gathered beauty of earth and in it a prophesy and a hinting of another and a fairer world. You go away and come again as these winsome flowers are making their toilet, as if to stand sentinel in the very gateway of exceeding glory.

Many of these flowers are indescribable. I have tried to portray the beauty of Elegans but give it up. There is Perfection, Her Majesty, Silver King and a long array of others, but your pen or tongue cannot do them justice.

There is a marvelous variety of form, varying from the tiny Pumilla and Verna to Gigantea, Acorus and the majestic Dalmatica. In time of blooming they continue from early spring until near the first of August. Then late in the fall you can take them up for house plants and enjoy their beauty nearly all winter.

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The Tectorum grows on the roofs of the houses in China and Japan, the roots burrowing in the thatch. These love a dry situation. Others will bloom in water and yet thrive in the dry, hot soil of Nebraska.

Many of them are exceedingly fragrant. The whole Pallida family, with William III., are not only noted for their beauty, but every blossom uncorks a vial of delicious perfume which floods the air.

Each variety has a foliage of its own. Some leaves, like the Siberian family, are narrow, others are wide with ensiform or sword-like appearance.

You may divide these into four groups:

The *bulbous,* that has bulbs like the tulip. These are the English and the Spanish and also embrace the June family.

The *tufted* embrace the Siberian and Japanese with other allied species. There is one variety of this family which grows in the Black Hills. They are said to be exceedingly beautiful. We secured a few hundred to experiment with. These all have great tufts of roots which must be pulled apart by main strength, when they separate into individual plants.

The *rhizomatous* group throw out roots something like potatoes. These spread out near the surface, each rhizome an independent plant when separated.

The *finger-rooted.* These are partly rhizomatous and partly like the fingers of the hand.

Compared with the peony these increase very rapidly. We have had thirty plants from one root in two years. They do not come as high as peonies, and they increase from five to ten times as fast. You get a few to start with, these soon become clumps, then when separated they are masses. This is what the good Lord likes. It is thus He plants His vast fields, and thus He gives His favorites the power to multiply so that His sons and daughters can enjoy His abundance.

In massing, these flowers give you the most decided advantage of all families of the perennials. First plant the dwarfs, then those like Sans Souci, the golden, then those a little stronger, then the queenly Madam Chereau, then those a little taller. Keep on with Dalmatica, Acorus and the Giganteas, and you have an ascending series—the dwarfs at the front and the giants four to five feet tall in the rear.

The Psuedo Acorus is sometimes called Acorus, Yellow Water Iris, or Jacob's Sword. Lynch tells us "This species is supposed to have furnished the heralds with the device called Fleur-de-Lys which tradition says was adopted by Louis VII. for the bearings of France,

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deriving its name from the river Lys on the border of Flanders. With sulphate of iron the juice yields a black dye. The plant was formerly used as a medicine as well as for a cosmetic. It was once held sacred to the Virgin Mary."

We do not say the iris is the most beautiful of our perennials. The four great families, the peony, phlox, iris and columbines, have each their attractiveness and an excellence and beauty peculiarly their own. We do say the iris has been neglected, and we wish to bring it to the front with the others.

The Iris as a Cut Flower. If cut just before opening and placed in water, they often have a delicacy they do not have in the open. They continue to blossom a long time. One will bloom and remain open for days, then it wanes and another takes its place—and so the succession is kept up. If you are to ship them, don't wait for full bloom, for then they are fragile and easily marred. We have been surprised at their adaptability as cut flowers. Often they have been thrown on the cellar floor just as they commenced flowering, and they would keep right on with their work for a week as though not detached at all. First the oldest flower would gradually fade and then another would come out, and this would pass away, and there would be another recruit to fall into line. When they are to be shipped some distance they are gathered first before opening and the most forward of the buds are wound lightly with raffia. This is removed when they reach their destination when they open beautifully.

It is astonishing, however, with what caution and reluctance people take to new things. The iris is one of the most resplendent flowers for Decoration Day, fully equal if not superior to anything else offered. Yet, notwithstanding their ravishing beauty they are rejected. People move in ruts. A few years ago the peony was ignored. It was nothing but a "piny," no one wanted it. Years passed by, and finally their beauty and fragrance won a place, and people cannot get enough for Decoration Day. If they cannot get roses, carnations and peonies, they consider themselves wronged, and the florist has abused them by not furnishing them their pet flowers.

A lady goes to buy flowers for a friend's grave. Roses and carnations are gone. But here are the glorious Chalcedonias, the fragrant and splendid Pallidas and the exquisite Elegans of elysian beauty—the fairest flowers that ever opened their petals to the sun, surpassing by all odds any other thing offered. But the lady says, "Yes, they are pretty but I wanted carnations," and she goes out with a long drawn sigh and tells her friends, "I couldn't get any flowers today." A tear trembles on her eyelashes as she says with most pathetic voice, "The grave of

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my dearest friend must go unadorned." If you would hand her one of the most exquisite flowers plucked from paradise itself, no matter how alluring its loveliness, how exquisite in form or attractiveness in fragrance, she would reject it because it was not a carnation or a rose. We

Iris.
Grown by C. S. Harrison.

have seen the most charming bouquets of columbines, red, white and blue, put up in the most tasteful manner for soldiers' graves rejected for some inferior, insignificant things because they were called roses and carnations. This is rather a cruel snub for some of the most charmingly dressed visitors that ever came to earth.

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Instead of eternally traveling in the ruts and confining oneself to two or three favorites it is better to reach out and give a cordial welcome to all—to the whole procession of beauty.

We have seen charming bouquets of pyrethrums with their cheerful and winsome smile rejected because, "I am not acquainted with them."

It will not, however, be many years before irises will find their way into the admiration of those who love the beautiful. Their long season of blooming from April to August, their surpassing beauty and fragrance will give them a prominent place.

The finer sorts are yet rare, and by the time they are raised in quantities to meet the demand they will receive a cordial reception. At first the peony had to combat the reputation of the old fashioned "piny," people remembering the ill smelling flowers of their mothers and could not believe the modern ones were as fragrant as the rose.

Talk to them of the iris, which is woven with the deft skill of Him who put the garments on the sun and painted the petals of the violet and the rose, and they say, "Oh, yes; we know them. They are nothing but flags. They used to grow by the thousands in the swamp back of our house." They ignore the 168 other kinds which didn't grow in their swamp, with the numerous hybrids which have gathered all the tints of earth and sky into their glorious forms of loveliness.

Mr. McBroom: How long would it take to bring them into flower?

Mr. Harrison: The first season, if the roots are of good size and of healthy condition. It is a plant of great vitality. Sometimes we put them on the floor of the packing cellar and leave them there for six months and then plant them in the spring. They are very hardy, and you may expect to get blooms the first year in many cases.

Mr. Probstfield: How deep do you plant?

Mr. Harrison: Oh, a couple of inches below the surface.

Miss Emma V. White: Have you made any experiments with seedlings?

Mr. Harrison: Yes, we made some experiments. You take the flower of the Aurea; it is a magnificent flower, but it will not bloom good if it makes seed. For instance: this Aurea is one of the most beautiful flowers I ever saw; until this year it was radiantly beautiful; this year they had inferior flowers. I was really ashamed of them until I found a whole patch of them was covered with seed buds. I saved the seed and got half a peck.

Mr. Mosbaek: Do you think the Japanese would be hardy for northern Minnesota?

Mr. Harrison: Under favorable circumstances and sheltered it will do very well. I had the Japanese iris in semi-arid regions, and they never came into flower, but I found in planting it and keeping its feet wet I got flowers.

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Mr. C. B. Clark: What is your practice in taking care of them in the winter?

Mr. Harrison: You must mulch them alone. I have twenty-five kinds of the Siberian; they were all very hardy.

Mr. McBroom: Are some of these hardy ones you speak of as large and as fine as the Japanese?

Mr. Harrison: I think they are fully as beautiful but not quite as large. You take Her Majesty; it is certainly beautiful; and the Elegans is a fine flower. They are not quite so large, but they are hardy, and they are exceedingly beautiful.

Judge Moyer: One advantage of the Siberian iris is that it comes quite late and prolongs the season two weeks, and if you have plenty of room I would advise you to plant the Siberian to prolong the season.

Mr. Harrison: When you take them up in the fall, you can put some in the house and enjoy their beauty all winter.

Relations of Plant and Animal Breeding to the Betterment of Country Life.

HON. W. M. HAYS, ASST. SEC'Y U. S. DEPT. OF AGRICULTURE, WASHINGTON, D. C.

I wish to greet this society on the part of the United States Department of Agriculture, which is ever ready to co-operate with and help build up all state and local organizations which are dedicated to country life betterment. I wish also to greet you on the part of the American Breeders' Association, and again to thank you for having been the first society to take a life membership in that organization. That association is growing and hopes very soon to follow the plan of combined monthly magazine and annual report, devised by this society and ably published by its secretary.

The Minnesota Horticultural Society is one of the most remarkable, if not the most remarkable, of state societies devoted to country life in America. The number and personnel of its membership, its semi-annual meetings, its publications, and its perennial experiments in methods of cultivation and especially with that part of plant-breeding which deals with variety testing, all combine to give it a status of remarkable power. It has been a mighty agency both in making Minnesota a more delightful land to live in and in overcoming the prejudice of people living in warmer climates. It is an inspiration to all who know of its work. It has been a safe guide to all who plant fruits, flowers and vegetables. It has been a wise guide to the commercial side of the tree and seed business. Its friendship for and help in promoting education for country life has been most useful. Its publica-

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tions form a library rich in that part of agriculture and in right country living which is a valuable asset to the state. It has helped to develop a sturdy group of men and women who are changing Minnesota from a wilderness of wild grasses and trees to a garden of flowers, fruits and other useful plants. It has the power, the point of view and the inspiration to lead Minnesota to develop the wonderful beauties of her great outdoors. Minnesota's lakes, rivers, hills, forests and other elements of natural beauty only need the expansion of work like that of this society, and of education in agriculture, to bring out and embellish them to keep her in the lead, not only as the "Bread and Butter State," but as the "State Beautiful." The suggestion of centering the work of beautifying Minnesota's open country in a department has in it a sound of the practical. Minnesota's outdoors made beautiful will yield large and rapidly increasing profits by supplying attractive and delightful summer homes for people from the southward, but the real reason for developing and enhancing the natural beauty of Minnesota is that her country people may live beautiful lives.

Principles of Breeding.—Those subtle but mighty forces of organic life which, as elusive as memory, carry potent and minute characters from parent to progeny through the generative cell are yielding up some of their secrets. Mendel, de Vries, Bateson, Davenport, Webber and other recent workers, have added much to the philosophy of Darwin. De Vries, Burbank, Wallace, Neilson, Gentry, Gideon and others, have based their practice of breeding on the simple but most potent fact that mutations occur, and that an occasional one has an economic value in practical breed or variety formation which is almost beyond computation. Mendel, Wallace, Caldwell, Neilson, Zavitz, Davenport, Webber, Williams and others, have brought into the work of breeding statistical methods, placing the analysis of species, breeds and varieties, and the syntheses of characters into new varieties and breeds, on a basis of scientific data. Babcock and others have invented devices useful in measuring the efficiency of individual animals and plants, that centgener performance records may form the basis for determining breeding efficiency.

It has fallen to the lot of the present writer, having been in touch with and having aided in these developments, to join with others in an effort to bring about wide co-operative organization of the many men and the sufficient means necessary to attack the problem of adding very largely to America's output of plant and animal products in a businesslike and adequate manner. The American Breeders' Association is laying deep the foundation for a broad general development of plant and animal breeding, for the betterment of many existing

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breeds and varieties and for the creation of many new ones. Its annual reports, the experts assert, contain the best collection extant of the literature of breeding. It has under way plans for a magazine. Its forty committees are aiding investigators, public officials in charge of breeding establishments and private breeders so to improve their methods as greatly to enhance their efforts. It has led in inaugurating numerous new lines of breeding, as in fish culture, breeding fur animals and semi-domesticated birds, and even the breeding of forest trees. But its main function is to help to bring about that general organization of public and private forces which will give America varieties of its great field, orchard and garden crops which will yield more value per acre and per worker, and will provide strains and even breeds of live stock which will increase the value of the products of live stock. Its mission is a timely one, when the world needs to increase its output of food and clothing, that this least expensive of all our lines of agricultural betterment may be brought clearly before public attention. While good farming and expenditures for fertilizers may result in as great an increase in our farm product as breeding, their expense is such as not so greatly to decrease the cost per barrel of flour or per pound of meat. The possibilities of increasing the American farm product by breeding may be eventually as much as the possible increase through good farming, and since this increase is secured at relatively very small cost it will greatly reduce the cost of food to the consumer. The conservation of our forces of heredity, their utilization in the best possible way, and even the creation of new betterments, are forcing themselves upon us as different phases of one of our large national interests. Those most competent to judge believe that ten per cent can be added to our plant and animal product. Since this means eight or nine hundred million dollars annually, and is produced with mere nominal cost, it is our largest and best means both of increasing the profits of the farmers and of decreasing the cost of living of those not engaged in agriculture.

That indefinite term, variation, has been analyzed by Mendel and his followers, and the discovery of a new group of facts and laws has made breeding start out to become a modern science. The artist at breeding, of which Burbank is chief, has a new set of tools; his colors are now elemental, and he knows some of the laws of their recombination. Common, everyday animal and plant breeding, mainly by selection, has been changed to a more clear-cut business. Creative breeding, under which new varieties and new species are originated by hybridizing, like the flying machine, is entering a new world of economics and a new order of philosophy, and is under a new inspiration

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with a basis of scientific fact. Because Mendelian facts are expressed in symbols, the biologist with a taste for mathematical formulæ is forging ahead in the newer philosophy of organic evolution and in the deeper mysteries of breeding. The fact that scientific breeding, wireless communication and aerial navigation may each require one or more decades to accomplish their larger development, is a small matter in the development of these enterprises. The interesting point is their successful inception, and the grand part is their final achievements. Minnesota uses the telephone to mighty advantage, and it is even more important that by the use of the wonderful force of heredity her wheat, corn, apples, potatoes, cows and pigs be so changed that the present value of her farm products will be increased ten per cent or, say, $30,000,000. Since in case of a number of varieties of wheat and other crops the increase is nearer twenty per cent, the estimated addition of ten per cent is a modest expectation from really comprehensive efforts. In dealing with the material and inspiring achievement in plant-breeding we should not lose sight of that brilliant pioneer achievement of Peter Gideon which gave the world the Wealthy apple and brought fame to Minnesota and to this society.

The most important fact or law in breeding may be stated as follows: One in several thousand plants or animals is of remarkable excellence, and one in a thousand, more or less, of these splendid individuals has in addition the power to so project its excellence into its progeny that their average is phenomenally high.

A corollary of this law is that the breeding of varieties of plants propagated by vegetable parts, as cuttings and buds, consists in producing and testing very large numbers, that the one in many thousands combining individual excellence with hereditary efficiency may be found and its clonal progeny multiplied into a variety for commercial use.

A second corollary is that the breeding of varieties of self-pollinated plants multiplied by seeds consists in producing and subjecting to tests very large numbers of excellent individual plants and testing the varieties resulting from the few which prove the most efficient mothers of centgeners of their progeny, that the very best may be multiplied and distributed to growers.

Another important fact or law in breeding is that by hybridizing two varieties or species propagated by cions or by self-fertilized seeds, the best characters of the two may be recombined in the same mother plant, and thus a new variety may be created, subject, however, to the law first named.

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Mendelian enthusiasts would have us believe that we can make new clonal or self-pollinated varieties by using relatively small numbers, providing full care is taken in securing the mother plants with gametically pure characters in the desired recombination. The practical reply, until commercial Mendelian results show to the contrary, is that even in case of clonal and self-pollinated varieties large numbers of mother plants must be subjected to centgener and field tests. Each valuable new variety is made up of a combination of many non-discernible characters, often along with a few which are easily observed in the recombined mother plant. The Mendelian, or formal, recombination of a few of the most important discernible unit characters is relatively easy and sometimes can be accomplished by using only small numbers. But even here there is need of recombining the non-discernible characters as well as the leading unit characters in such a way as to secure the largest result, and the use of very large numbers pays as well in the selection of the best mother plants out from among hybrid stocks of wheat as from the plants of the standard variety. The goal is too great to justify stopping short of securing the full possibilities in the way of a variety which will combine in the most useful way the largest number of discernible and non-discernible characters. The elaborate scheme of centgener, field, and laboratory testing in use at the Minnesota Station is fully justified. On the other hand short cuts and other general improvements in centgener and variety testing devised by many breeders, will make the work less expensive, will shorten the time between mother plant and the distribution of the new variety, and will more certainly secure important improvements.

The breeding of open pollinated plants and of animals is far more complicated than the improvement of self-fertilized plants or plants propagated by cuttings or other clonal parts.

Within the variety of breed, as the characters do not usually exist as discernible character pairs, the Mendelian law of recombination cannot be employed. Art, records of individual performance, centgener averages of breeding efficiency, family record averages, outcrossing, and especially facts which lead to the discovery of the parent which displayed exceedingly rare and superior breeding efficiency, and that form of narrow breeding which proves best to perpetuate the blood of the plant or animal of rare breeding power—these are here the great agencies which are being combined in creating new strains of varieties and breeds.

The formation of open pollinated species of plants and hybrids of animals opens up the really vast and intricate breeding work of

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the future. The charted scheme of breeding corn devised by Williams, of the Ohio Experiment Station, stands out as the brightest piece of constructive breeding work in this country. It contains many of the elements of a general plan of making improved commercial strains out of standard varieties and breeds, and of making new varieties and breeds out of hybrid stocks. Its philosophy and its details should be mastered by every breeder, either of plants or of animals. This plan proves that new, broad, constructive principles can be introduced into breeding as well as into machinery with which to navigate the air. Williams adapted centgener testing to open pollinated species, and devised means for outcrossing under which the blood from the outcross is at once discarded if it does not produce a valuable blend with the more narrowly-bred main stock. He also devised a method of distributing new varieties of open pollinated species on merit under a most efficient system.

If we need other proofs that science is beginning to be a controlling factor in breeding, we may observe Zavitz' wonderful variety testing in Ontario. Now that he is adopting centgener breeding, and now that the Minnesota Station is learning from him improvements in variety testing and seed distribution, these two pioneers in the extensive breeding of field crops will have most wonderful plans in operation. Each of these experiment stations, with less than twenty thousand dollars annually, is adding several million dollars to the value of the crops of the state or province with an overflow into adjoining states. Neighboring states which followed in taking up this work are each adding new methods and short cuts from the field crop breeding nursery to added dollars per acre on millions of acres in their respective states. Scientists in the United States Department of Agriculture, and scientific and practical breeders throughout this and many other countries, are rapidly adding to methods and to the practical results of scientific breeding.

The fact is that heredity is coming under the dominion of science. The existing unit characters of all domestic and many wild species are now available to be recombined in more efficient varieties, breeds and species, and men will be slow to admit that they cannot create new characters which can be combined into varieties and breeds more valuable than any it is now possible to form by the recombination of characters at present existing. Many states are following Minnesota's plan of extensive breeding of plants, and the United States Department of Agriculture is breeding many plants in numerous sections of nearly all the states. All this work under the direction of scientists is rapidly developing a body of knowledge which is leading many private

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breeders to enter the work of creative breeding, and animal breeding is taking on a more scientific impulse, largely incited by the brilliant, theoretical and practical results in plant-breeding.

Minnesota had in 1899 the disgracefully low yield of less than eight dollars per acre for all crops, though the yield is now much higher. Even assuming that it is $10, it is only half what it should be and what it must be for our fields to meet their share of the nation's requirements for food and clothing or for the state to hold up its head among its sister states.

Our wheat crop is about fourteen bushels per acre, where it should be twenty-five bushels. The Minnesota Experiment Station has the proof showing that five bushels can be added by breeding and more than another five bushels by properly preparing the land. The work preliminary to this end has been done in a most remarkable way by the State Experiment Station. The state's interests demand that the fundamental work of breeding, of determining the best crop rotations and of deciding on the best systems of farm management, be pushed with ever increasing vigor, and that the seeds and the facts concerning field and crop management be carried to the farmers of the state, if need be almost against their will. The day of extensive farming to secure the unearned increment arising from increased selling prices of land, on large acreages purchased in pioneer times, has largely passed in the southern part of the state and is passing in the newer sections of the timbered area. When all lands have reached their normal valuations, and interest must be earned on what the land is worth to produce crops in a permanent competition with the lands of the entire country, the yields per acre must be such that both the capital invested and the current expense and labor shall have returns. Plants and animals highly bred to suit the local needs in place of varieties, breeds, native plants and scrub stock not well adapted to the conditions, are an absolute necessity to enable Minnesota farmers to live as farmers should live.

The State Experiment Station, with its branch stations, its co-operative relations with the State Horticultural Society and other state societies devoted to plant and animal production, and its association with the United States Department of Agriculture, has the problem in hand in a most remarkable way. Its plans for creating new varieties of crops and plants on its various farms, and in co-operation with private persons and organizations, and of thoroughly testing them through co-operation with growers, also of distributing them under a business-like system to all growers, have, one and all, already proven most effective. The improvements which are coming in fast by adopt-

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ing plans proven efficient in other states and in other countries will give still further assurance of large economic results. While these improvements which cheapen, shorten and make more effective the plans of work are important, there should be no lack of wise liberality in state expenditure where several thousands of dollars yields millions, as in the breeding of wheat. Even if each added million dollars' worth of wheat cost ten thousand dollars for breeding, there would be a surplus of $990,000 to increase the profits of the farmers and to cheapen the bread of the people. There is also several hundreds of thousands of dollars added to the income of labor and capital of the mills and the grain dealing and transportation companies.

The experiments first inaugurated in this state under the so-called plan of circuit breeding to create new strains of the breeds of livestock deserves the widest support. This system is one of the outgrowths of the experiments in breeding at University Farm, which were begun twenty years ago with animals more in mind than plants. This plan escapes many of the hide-bound traditions of animal breeding of the past century. It applies that most fundamental law of breeding, that the one in very many combining to a high degree individual excellence and power to project that excellence into its progeny must be sought out and used in forming the new strain or breed. It gives full opportunity to follow narrow breeding that the valuable blood of the new mutating parent or small group of parents may be kept segregated into a permanent source of superior blood for pedigreed and grade breeding. At the same time it gives opportunity to bring in the blood of other remarkable mutations and strains for trial, allowing them to be discarded if a valuable blend is not produced, or to be retained if they form with the narrowly bred blood of the main stock a network of descent more virile and more valuable. A knowledge of how to overcome the difficulties of thus bringing in outcrosses and of discarding them if the results are not desirable, we owe in part to such animal breeders as Gentry, the breeder of line bred Berkshire swine, but more to Williams, the breeder and distributor of pure pedigreed races of corn. Gentry, with more of the art of the man for a lifetime dealing with one family of animals, showed how the individual man can work to form and improve a strain; Williams, with more of the highly organized scientific methods of centgener performance record breeding, and with an extensive co-operative organization, showed how science and associated efforts can grapple with the corn crop, the beef crop, or the dairy cattle of a state, and by breeding add hundreds of thousands or millions of dollars to the state's output.

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Zavitz, of Ontario, with a co-operative organization of college graduates and other farmers, showed all states and provinces how to introduce rapidly every newly improved strain of plants to the great majority of farms and, at a very small expense, thus to help add millions to the output of the farms.

A Fruit Growing Experience at St. Cloud.

MATH TSCHIDA, ST. CLOUD

I want to state at the very outset that I am nothing more than an ordinary farmer and that I do not confine my efforts to the raising of fruit. But because I have been successful in a way I take pride in what little I have achieved and will gladly make public my experience if I can, in any way, benefit others interested in fruit raising.

When I came to St. Cloud ten years ago there were few, if any, orchards to speak of. At the place now occupied by Mr. Mayman, in Benton county, there was a farmer who had begun in a small way to raise apple trees, and his efforts were continued with marked success by the present owner. The soil and some of the climatic conditions (not all, however) were similar to those of my native country, and I concluded to make a trial at raising such fruits as I thought would brave the climate. I was, of course, discouraged by the neighbors, who predicted that I would never see the day when I would pick apples from my own trees. I wish to remark right here that these self-same men have since been obliged to admit that they were mistaken.

I started with a dozen trees which I purchased from the agent of a Minnesota nursery, and by taking care of them in the way he told me I lost each and every one of them. His instructions were to mulch the trees with rich manure early in the fall. I found that the time set by him for mulching was too early, in some instances starting the trees to raise sap, in consequence of which they froze. On the other hand the manure applied thus early did not allow the ground to freeze firmly about the roots, which, to my notion, is just as necessary as many other conditions.

I was not discouraged by my first failure, however, and again invested in several dozens of trees of various kinds. This time I decided to do a little experimenting, particularly in the line of mulching, and I succeeded in finding the right thing after some time. I no longer mulch the trees in the fall, nor do I use manure for the purpose. Instead between the first of January and the first of February, when the

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ground is frozen "and the mice are asleep," I take some very light manure from the straw stack where the cattle have been feeding and pile it about the trees. By this time the frost has well penetrated the ground, and the roots are firmly imbedded. This mulching is left at the foot of the trees all spring and summer and prevents them from

Mr. Mat Tschida, St. Cloud, in his orchard.

coming into bloom too early. I have never yet had a tree harmed by any frost blighting the blossoms. They may get a little later start, but it is a substantial one, and the trees easily catch up once the warm weather comes. In the fall when everything has been removed from the gardens, I turn the chickens into the orchard, and they chop up

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this manure finer than a man could do it by hand. The roots of the trees are then given something in the nature of ventilation, the sap recedes, and all is ready for the zero weather of winter. In January the operation of mulching is repeated.

Preparing the Ground.—For apple trees, in fact for all kind of fruit trees, I prepare the ground as follows: I manure the ground well, plow up deep and raise one crop of potatoes on the land. After the potatoes are harvested I plant the land to trees, setting out strawberry plants between the rows. The latter I leave for two or three crops, when I take them out. After that I plant no more between the rows but keep up diligent mulching which keeps down the weeds and keeps the ground moist and loose. I now have one hundred trees, seventeen of which are bearing finely. The best of these are the Wealthy, Duchess and Yellow Transparent.

I should not forget to add that I also wrap the trunks of the trees with rushes, which protects against sun scald and also seems to make them grow stronger.

Strawberry Culture.—I have also been quite successful with the raising of strawberries for the market, and a word or two about it may not come amiss. I prepare the ground in the same way as I do for apple trees and plant potatoes, but do not plow again after the potatoes are harvested. Instead I level the ground with a harrow, tear it up again with a horse cultivator and then plank it smooth. I mark it in rows five feet apart and set out the plants eighteen to twenty-four inches apart in the rows. Of course weeds must be kept out. For clipping the runners I have hit upon a contrivance which any blacksmith can prepare. Onto my horse cultivator I fasten two rolling coulters instead of the shovels. Then, with the cultivator astride of the rows, I drive through the patch and trim the runners with a sharp, clean cut of the coulters. Every time I clip them I set the coulters farther apart until the rows are as wide as I want them. This insures a uniform row and presents a pretty appearance. All that remains is to pick the berries, for they will yield gratefully. I have one-eighth of an acre from which I marketed $40 worth of strawberries the past summer. I shall double the size of my patch next year. After the first snow I mulch the strawberry plants with light manure, taking off part in the spring.

Other Fruit I Raise.—Besides my apples and strawberries I have about fifty plum trees, twelve of which are bearing nicely. I have also

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Home grown fruits—in the orchard of Mat Tschida, St. Cloud.

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twelve Concord grape vines which yield luscious berries every year. These I lay in trenches in the fall.

Some years ago I planted the seeds of four California prunes and all are bearing nicely, but, though all four prunes were taken from the same basket, every tree bears a different kind. One is the regular long, dark blue prune, the other is plum-shaped, a third is yellow and the fourth is a small plum.

The Small Fruit Garden.

A DISCUSSION, LED BY R. A. SCHUTZ, INSTITUTE WORKER, LE ROY.

Mr. R. A. Schutz: This is one question that Forest Henry brings up. He speaks of strawberries around Dover as follows: "Last year we had a splendid crop of strawberries, but previous years we had trouble with the crown of the strawberry plant becoming brown." He says that in digging down early in the spring, he finds the roots are loose on those plants, and he attributes that to the fact that we do not mulch early enough in the fall. He states the matter in this way: He says we do not mulch until the ground is frozen solid and previous to that the ground freezes and thaws, and he ascribes the appearance of the plant to that condition. Now, we want as much light on that subject as we can get. I want you to remember that Mr. Henry wants to know whether we shall attribute this condition to the fact that we do not mulch early enough. Too early mulching will rot plants. The crown would grow out if we have a rainy or a wet season. Now, I would like to know whether anyone can throw light on this subject.

Mr. Probstfeld: I want to give what little experience I have had in this direction. I have always been aiming to mulch my strawberries, but never got at it until a snowstorm had come, and that would take the place of mulch. Our soil is a black loam, with clay sub-soil. It is a very hard soil to grow things in. Some claim that strawberries have never been injured by freezing in the spring, but any way I have good success. I do not know whether it is luck or whether it is the soil.

Mr. Schutz: Then you don't mulch?

Mr. Probstfeld: No, we intend to mulch, but a snowstorm gets ahead of us. I don't know what the outcome will be next spring; whether it will be the same as last or not. That is my experience. That is all I can say on the subject.

Mr. Schutz: Now let us hear from others. I would like to have this thing threshed out.

Mr. J. O. Weld: How much cover do you put on?

Mr. Schutz: Just enough to cover.

Mr. Kenney: I think they should be mulched quite early and some more applied later.

Mr. Schutz: I never mulch until the ground is frozen solid.

Mr. Kenney: What I meant to say was that a light mulch should be put on early, and then after the ground is frozen the balance of the mulch needed can be put on.

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Mr. Pond: Light freezing does not hurt the plants.

Mr. E. F. Pabody: What would you use?

Mr. Schutz: Straw; I use the cleanest straw I can get.

Mr. Pabody: Have you ever tried leaves for mulching strawberries?

Mr. Schutz: No, sir.

Mr. F. J. Cowles: Have you ever tried rye straw?

Mr. Schutz: No.

Mr. Cowles: I find that to be the best covering I can get.

Mr. Schutz: I would like to get this thing threshed out about crown-killing. Forest Henry says it is because the plant has not been covered early enough.

Mr. H. G. Groat: I think the trouble is that the ground is too dry when the fruit buds are developing in October.

Mr. Seth Kenney: We did not have any freeze until the 23rd of October, and then it came all at once. It was seven degrees below freezing at my place.

Mr. Sahler: Do you think strawberry plants were injured by that freeze?

Mr. Kenney: I cannot say; they may have been.

Mr. Sahler: Then after that we had heavy snow and rain.

Mr. Kenney: Yes.

Mr. Sahler: Well, if it became warm after that, the plant would rot, would it not?

Mr. Schutz: Yes, I think so.

Mr. Weld: I don't think strawberries need very much protection in the way of mulch.

Mr. Schutz: Where do you live?

Mr. Weld: At Mound, Minnetonka.

Mr. Schutz: That might not hold good everywhere, and yet Mr. Probstfeld says they need no mulch 'way up in the Red River Valley.

Mr. Probstfeld: I do not mulch my strawberries; they are well sheltered by a timber belt, and on the south of my strawberries there is timber planted twenty-five years ago, and the leaves sometimes drift in and give the plants a little protection. We intended to mulch this fall but did not get at it.

Mr. Pabody: Well, that is about the same thing; the leaves drifting in there give the beds almost mulch enough.

Mr. Schutz: Forest Henry claims they should be mulched before there is any freeze at all.

Question: "Is millet hay, cut early enough, good material for covering strawberries?"

Mr. Kenney: I should think it would be as good as any straw so it was cut early and no seed got in the ground.

Mr. Weld: I think it would be worth too much for hay to use for mulch.

Mr. Pond: If there were seed in it, they would certainly come up and injure the strawberries.

Mr. Weld: We use marsh hay.

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Mr. Pabody: The absence of seed is one advantage in using leaves.

Mr. Schutz: How would cornstalks do for a mulch?

Mr. Probstfeld: That makes a good material, and it is free from weed seeds.

Mr. Pabody: It is too heavy.

Mr. Groat: Yes, if it stays on, it is too heavy.

Mr. Schutz: I have favored straw as a mulch. I take the mulching off my strawberries in the spring; that is, I do not take it off entirely, but I leave enough so that the fruit will be protected, and the straw decays and becomes mixed with the soil. That is the objection to cornstalks, they are too heavy to use as a mulch. A young plant will go through a light covering of clean straw and the fruit will rest on the straw, and there will be no sand or soil on it. That is my reason for using straw. The objection to forest leaves is that they pack so solidly over the plants it is difficult for them to get through.

Mr. Pabody: I do not take them off; I let the plants come through the leaves.

Mr. Groat: The leaves blow off my strawberries.

Mr. Schutz: There was one year when we had a heavy fall of snow with the first freeze. The snow was quite deep, and I did not mulch until the following March when the snow began to thaw; then I put on a mulch of probably two or three inches, and that was on when the snow left. I found the result better than anything I had ever tried. They were covered up with snow, and the snow held back the growth, and my strawberries were much later than others. I did not get as early fruit as my neighbors, but it held out later. That year we had quite a late frost that damaged strawberries to a considerable extent, but mine were not damaged at all.

Mr. Cowles: I have noticed that where strawberries were covered with snow, I had the best crop.

Mr. Pond: I do not think there is any better covering for strawberries than three or four inches of snow, with straw on top.

Mr. Schutz: If the ground was not frozen too early, I think that would be all right.

Mr. Pond: They will come out good and strong in the spring.

Mr. Martin: Has anybody had experience in using sawdust?

Mr. Groat: No, they can't get enough to put up ice.

Mr. Schutz: Would it not pack too hard and smother the plants? I have used sawdust for mulching about apple trees, and it was a failure. There is no fertility in it until it rots; then, too, there are little grub worms that get into the sawdust, and they get into the bark of the tree. The sawdust is a harbor for insects when placed around apple trees, and I do not think it would be much benefit to use it on strawberries.

Mr. Cowles: I have covered my strawberries for a number of years with rye straw, and last year I hauled it four miles.

Question: "What is the best fertilizer for strawberries?"

Mr. Kenney: Wood ashes.

Mr. Probtsfeld: How would you apply them?

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Mr. Kenney: Sow them on when they begin growing in the spring.

Mr. Schutz: Could they not be sowed at any time?

Mr. Kenney: I think it would do no harm, but I believe you get better results if you put them on about the time when they begin growing.

Mr. Martin: Bone meal is a good fertilizer.

Mr. Schutz: Yes, but where can a farmer get bone meal; that is the question. I will tell you what I use. I am engaged in poultry raising, and I take poultry manure in the fall of the year, just when the plants begin to turn dormant, when the leaves begin to dry out; then I fertilize the plants with manure from the poultry house. I shovel that out from the poultry house, load it on a wagon, and haul it down near the strawberry patch and attend to it myself. Then I take a bushel basket and fill it full and go lengthwise of the rows and shake it over the plants,—not enough to cover them, but simply to give them a little of it. I find when I do this we increase the vigor and growth of the strawberry plant almost twice as much as with an ordinary fertilizer. In my opinion, that is the best fertilizer we can use on strawberries.

Mr. Martin: What element in plant food is required for strawberries?

Mr. Pond: Hardly anything that comes from the soil; it almost all comes from sunshine.

Mr. Schutz: If any fertilizer is used, the rain carries it down.

Mr. Martin: What I mean is, what chemical element is necessary to produce the strawberry?

Mr. Pond: I got my information from a professor. There is a very small fraction of fertility necessary for the growth of the strawberry that comes from the soil.

Mr. Groat: There is ninety-four per cent of water in a strawberry.

Mr. Martin: How are you going to fertilize intelligently if you do not know the chemical constituents of the strawberry?

Mr. Sahler: Well, if we get the strawberries, we don't need to bother what's in them.

Question: "Why is it Germans are the best gardeners?"

Mr. Sahler: I suspect you want me to answer that, but I will let somebody else do it.

Mr. Cowles: The reason is that they are brought up to hustle.

Mr. Probstfeld: It is because they have the French as near neighbors.

Mr. Gust Johnson: They are not afraid to work.

Mr. Schutz: You have not hit the right mark yet. It is because the good wife helps, and they all co-operate. The best gardener I ever knew was my mother. I do not mean to be understood that my wife does all the gardening, but in gardening, as in everything else, we co-operate. We plan the work together, and we carry it out together, and there is one great secret of success, when the husband and wife, and in fact the whole family, co-operate in the work that is to be done.

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Mr. Pabody: I never had any trouble with diseases of the strawberry, but last spring as the blossoms began to come out the little fruit buds turned brown, and a good many dropped off.

Mr. Schutz: Did you have frost at the time of blooming, even light frost?

Mr. Pabody: I don't think there was any frost.

Mr. Schutz: Now, we come to the raspberry; that is the last. What do you know about the raspberry?

Mr. Kenney: I have been planting Prof. Hansen's Sunbeam raspberry, and I believe that is the best we have now. It is quite large and a very great bearer.

Mr. Schutz: Is it self-fertilizing?

Mr. Kenney: I don't know; I have no other near it. This is the first time I ever set it out; they bear so heavily the bushes bend to the ground.

Mr. Sahler: Is it perfectly hardy?

Mr. Long: In reporting the South Dakota horticultural convention last year, it was stated that it had stood a temperature of forty degrees below zero without protection.

Mr. Schutz: Where can it be obtained?

The President: Any one can furnish it. I think any nurseryman in South Dakota can furnish it, and the nurserymen in this state are getting it.

The Structure and Composition of the Potato.

F. E. OLDER, COLLEGE OF AGRICULTURE, ST. ANTHONY PARK.

When Europeans first visited the coast of Chile, the potato was being cultivated by the aborigines for its edible tubers. It seems to have been brought to the coast of North Carolina and Virginia in the sixteenth century and from this region it was carried to England by colonists of Sir Walter Raleigh about the year 1585, though it may have been brought to Spain even earlier. At first it was thought to be poisonous, but a series of poor harvests in western Europe brought the potato into prominence as an article of food, and it has ever since maintained a constantly increasing importance among food products of both Europe and America. In addition to this very important use, the potato serves for the manufacture of starch, glucose and alcohol,

The potato tuber is a modified underground stem, shortened and thickened as a storehouse for plant food. The outer bark, inner bark and wood of a tree have their counterparts in the skin, the cortical layer, and the medullary area of the potato tuber. The outer layer is composed of a thin grayish or reddish colored corky substance and serves as a protection and covering for the inner parts of the tuber. It makes up about 2 1-2 per cent of the weight of the tuber. The other

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parts can be seen best by cutting a very thin slice off the potato and looking at it toward the light.

Inside the skin is a layer, one-tenth of an inch to one-half of an inch in thickness, called the cortical layer, containing many fibro-vascular bundles, or tubes, which extend from the stem to the eyes. This region is slightly colored, and turns green if exposed to the light for some time, imparting an unpleasant flavor to the tuber. Practically all of the coloring matter is in this layer, which comprises about 8 1-2 per cent of the weight of the potato. In paring, the skin and part or all of this cortical layer are removed. In scraping new potatoes, only the outer skin is removed.

According to the results of investigations carried on by Prof. J. W. Gilmore, of the Cornell University Experiment Station, a thick cortical layer indicates that the tuber was grown too close to the surface of the ground and has poor quality. The poor quality in this case is probably due to the larger amount of albuminous substances which are found in the cortical layer. and though they are of high food value they make the potato soggy when boiled.

The flesh of the potato is made up of the outer and inner medullary areas. The outer one contains the main bulk of a good potato and also the chief part of the food. It is composed of a celiular structure, the cell wall being made up of insoluble cellulose, the cells containing many starch grains ranging from one-three hundredth to one-six hundredth of an inch in size. Under the microscope these starch grains are more or less oval and are built up in concentric layers. The inner medullary area appears in the center and extends lengthwise the tuber, with arms extending out into the outer medullary area. This part contains less starch and more water than the outer medullary area. There is an erroneous notion that this region is a sort of core, and that in cutting seed potatoes each piece should contain some of this area. As a matter of fact it is really the least important part of the potato.

The eyes are arranged on the tuber in spirals, five eyes encircling the potato. The eyes are really miniature branches, but they are the buds from which growth starts, and sometimes several sprouts start from a single eye. A cross section of the potato shows that the cortical area extends from the eyes in radiating lines.

The value of a potato for food depends upon its composition and upon its physical structure. The chief food in it is the starch, with some protein.

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The U. S. Department of Agriculture Yearbook for 1900 and Farmers' Bulletin No. 295 report the composition of the edible portion of the potato as follows:

Water, 78.3%; fat, 0.1%; starch, 18%; fiber, 0.4%; protein, 2.2; ash, 1%.

The chart shows that about three-fourths of the potato is water and that the bulk of nourishment is starch. No one set of figures can be given for all varieties and all localities. It has been shown that climatic conditions, depth of planting, character of the soil, length of growing season before the tops die, and earliness or lateness of the variety, all have a bearing upon the composition of the potato, especially the starch content.

Work at the Wyoming Station indicates that, in that dry climate, potatoes grown on irrigated land contain more water than those grown where irrigation is unnecessary.

The Virginia Station Bulletin No. 56 states that the starch content varies for variety and locality. At the Cornell Station experiments show that when tubers grow in a sloping position, there is considerable difference between the two ends in physical arrangement and in cooking quality; also that potatoes grown at a depth of one and one-half to four inches are better than those grown at a greater or a less depth, and that an even temperature is highly desirable. It is further shown that the tubers should be ripe in order to have good quality. If the growing season ends before the potatoes are fully mature, the quality is poor.

Extensive investigations were carried on in 1890 tc 1893, by the Virginia Experiment Station in which potatoes grown in twelve states were obtained and analyzed. These showed comparative uniformity, although the starch content ranged from about fourteen per cent to over nineteen per cent, for the same variety.

In this connection, the results in our own state are interesting. The average composition of twenty samples grown in different parts of Minnesoa, as determined by Prof. Harry Snyder, was:—Water, 75.45%; crude fiber, 0.33%; starch, 19.87%; fat, 0.08%; nitrogenous material, 2.5%; ash, 1%; other substances, 0.77%.

This goes to show that Minnesota potatoes are rich in starch, but rather low in protein, only about one-half of the nitrogenous material being digestible protein. When cooked, such potatoes have the white, mealy character which is so much desired by people in the United States.

Right here we must distinguish between potatoes grown for table use and those grown for the manufacture of starch. In Germany, a

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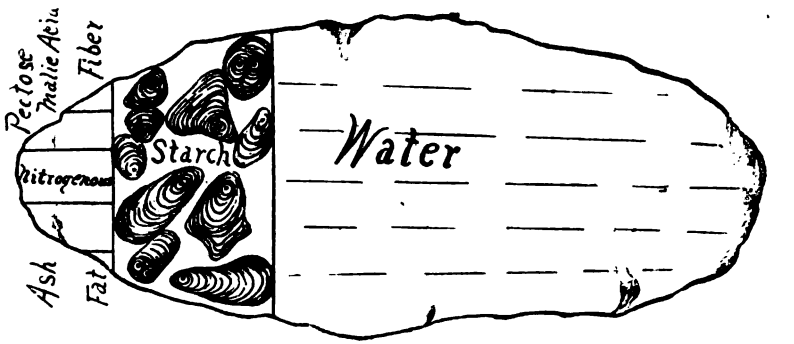
high starch content is desired. In that country potatoes are grown for food and also for their starch content. Some varieties have been selected and developed there for their high percentage of starch, regardless of their table quality, while other varieties are grown because of their excellence for table use. The result of many analyses shows an average of about 20 per cent of starch in the German potatoes.

In France, the demand seems to be for a potato that will hold together when cooked, and that is yellow and soggy when boiled. These conditions are found in potatoes low in starch and high in protein. Two French scientists, Coudon and Bussard, have made investigations and tests of a large number of samples and varieties. Their conclusions are that the culinary value of the potato is directly proportional to its nitrogen content and inversely proportional to its richness in starch. Thus in France where the demand is for a potato that shall



Showing composition of the potato.

be yellow and soggy when boiled, they seek a low starch content. In the United States, where a white, mealy potato is wanted when cooked, they look for one high in starch. In France, the starch content is about 14 per cent or 15 per cent on the average; in the United States, 18 per cent; in Germany, 20 per cent.

That the variation in composition in the same country is considerable, is shown by Carman in his book entitled, "The New Potato Culture."

The result of seventy analyses shows the following range:

	Maximum	Minimum	Average
Water	68.29	82.88	75.77
Carbohydrates	12.05	26.57	20.56
Nitrogenous material	0.5	3.6	1.7
Crude fiber	0.27	1.4	0.75
Fat	0.05	0.8	0.18
Ash	0.42	1.46	0.97

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Thus the variableness in composition is considerable; but the large number of analyses run rather close to the average.

In 1904, the crop of potatoes in the United States was 332,000,000 bushels. Of this crop, only 5,000,000 bushels were used in the manufacture of starch. The remainder were used chiefly for food. Therefore the cooking quality is of prime importance here.

The principal ways of cooking are boiling, baking and frying. In all, the action is much the same. The heat causes the water in the cells to expand and rupture part of the cell walls. Then the starch grains are broken down by the water and heat, and more water is incorporated into them. Thus the effect of cooking is to break up the cells and the starch grains, making them more easily digested.

Generally there is little change produced in the composition of the potato by cooking. However, baking drives out 10 per cent to 20 per cent of the water.

Prof. Snyder, formerly of the Minnesota Experiment Station, determined that 80 per cent of the albuminous material of potatoes is in water—soluble forms. When potatoes are boiled, they should be put into hot water to start with, as by so doing the albuminous substances are coagulated at the surface and are held in the potato. If started in cold water, much of these materials will be dissolved and removed from the potato. Prof. Snyder has shown that when peeled potatoes were started to cook in hot water, the loss of albuminum was 10 per cent; but when started in cold water, the loss was 80 per cent. Potatoes with the skins on, lost only 2 per cent when started in hot water; but they lost 50 per cent when started in cold water.

The lesson is evident. Never soak peeled potatoes in water before boiling, and always have the water hot before putting the potatoes into it. By heeding these two rules, there will be very little change in composition caused by cooking.

The conclusions drawn from investigations at the Cornell Experiment Station are that the cooking and food quality of potatoes is influenced much more by their physical structure and arrangement than by their chemical composition; also that the mealy quality and the flavor are modified by the daily range of soil and atmosphere temperature during growth, the degree of ripeness of the tubers when the plant dies and the condition of the soil. The evidence also shows that these physical conditions can be largely controlled by the intelligent grower.

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A Horticultural Ramble.

W. M. STRADER, MANKATO.

Many years ago during a very hot afternoon in Florida, the writer chanced to pass an orange grove in time to see Mrs. Minzesheimer step out on the porch and call:

"James! James Minzesheimer! Don't you know better than to be working in this hot sun? Come into the house this minute and take your rest! And, while you're resting, you may as well scrub the kitchen floor."

The name of the people was not Minzesheimer; the man's name was not James.

Mr. Strader and the "first fruits of first garden in the brush." First residence among the stumps.

We came from Ohio River country to Minnesota in 1901; secured stumpage overgrown with brush and have been "scrubbing" ever since that date. This is the first summer it has not continuously rained in this section. We have slept in mud, awakened in mud, waded in mud for six summers! Now and then we have seen the sun for a few days at one time, then the ground would dry, and we would adopt hope and replant, only to be disappointed. And that's the way most adoptions end. But what can one do when floods, when deluges of water on their way to the sea, flow into one's cellar windows from the higher prairie on one side of the house and out on the other side.

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We had planned to grow the finest strawberries, blackberries and kindred small fruits, to have an A 1 orchard and as fine a garden as we had in the East. To keep two good cows, three horses, ten she pigs, fifty sheep, and that breed of hens that laid not less than three hundred eggs per hen a year: requiring only a short resting season during July and August to moult in.

"Man proposes but——." We pulled, dug, grubbed, hauled and burned in mud. We made a little garden in the grove, and the rabbits fattened on it. We planted fruit seeds and nuts from Eastern friends, and the rabbits cared for them when they sprouted. The

Mr. and Mrs. W. M. Strader "The Junglites."
For background a black locust hedge second August from the seed.

hunters were welcome to the rabbits—they were not welcome to our poultry, but they secured them while we were away at divine service. And as our woven wire fencing surrounding the farm was a bother to trespassers, they cut that. As we had plenty of time, we had to spend it in trying to get our stock out of our good neighbors' crops—while we rested.

Well, we made three strawberry beds only to have each grass-grown the first season. Why did not we cultivate? Other fruits developed the same way. We replanted the next spring, hoping—and deluges came again. And grass did not forget to be busy. I hate red-top and June grass. In Ohio after preparing the land and sowing grass seed, we get down on our hands and knees and kow-tow to

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it in order that it may get a start. We are not kow-towing to grass seed in Minnesota. What happened in our garden happened in the cornfield. After the corn was too high to cultivate the same old grass got busy again. We were obliged to turn over a new formed sod each spring.

I look back to the days of 1901—that hot summer when I worried about getting pasture started on this bare, black leaf mould between the stumps. And then when I think of the grass in unwelcome places my temperature rises above normal—and there is not a red hair on my head—to be exact there is very little of any kind of color. Plenty of young pigs appeared one spring. Our plowings and plantings and cultivating brought no crops. We bought the feed. We had plenty of pasture, sixty acres of it. During the summer there was not starvation—during the frost times there were no dividends. Our hopes were blasted. Too much of a hope diet maketh one thin in purse.

Lambs came one spring. Drug stores sell bottles and sheep nipples, and cows give milk. We had plenty of time to feed a dozen lambs every two hours for three months, whose mothers were suffragettes and had social duties that carried them above trifles like nursing lambs.

We were resting!

And what of the hens? They laid bountifully when eggs were cheap. They preferred to moult in winter. And those two cows? One choked into eternity, and the hogs "waltzed her off handsome" before she got chilled. And the horses? One colt that had passed years of discretion and was in second childhood, sawed one hoof in a barbed fence and went on a vacation; and the next spring performed in like manner with the other hoof—thus securing two years of rest. He should have gone to the "packing house."

But at last, "The rope began to hang the butcher, the butcher began to kill the ox," etc. An end came and the "old woman got home with her pig."

The last springtime was near the normal. The summer the best we have had since 1901 in this vicinity. In looking back we see we have accomplished something. Not all of the apple trees have drowned. We had a little crop this year—two trees. We have lost our chart, so do not know what this variety is. But these two trees will be sawed up or grafted if they produce the like next year. We have no strawberry bed, but we will have one later. "I feel it in my bones!" And it's much better to feel strawberry beds in your bones than rheumatism.

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Among the chestnut trees in the nursery we have one left. It was transplanted out of reach of lambs. It thrives too. A lotion made from chestnut leaves cures chilblains. My chestnut trees move whereever I move.

The sheep—large and fat, go over a high fence or through a cat hole. They ate our roses that were fenced in and did not pass idly by the shrubbery. They did to my English walnut tree what four Minnesota winters could not do, and my beech trees went with the English walnut.

There is a "devil sheep" in every flock. Mine had four. Let us go out the front gate, and those sheep knew it; so did we when we returned home. But we're going to plant seeds and nuts again. Al-

North side of the real home.

though fenced, the rabbits discovered my seedling pear trees last winter. Snowdrifts were the cause of it. Our neighbors' cows walked over the drifts into our domain. A rabbit can go where a cow can. They sprouted in the spring and are alive, even if the grass did do its best to smother them. And we are going to rest from our labors and kill grass.

Some one in one of the farm papers asked the advisability of transplanting a fruit tree after it had become established. The answer was not to try it. In Lake Erie country, one time our home, my father planted a nectarine close to the house in an inconvenient place, as proved later. It was suggested to cut or transplant it. It had borne its first crop, and the crop was toothsome. My father advised not to do so. The trunk was then about four inches diameter, and the

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tree some eight feet high. My father spent the following winter in Florida. We remained home to get rid of that tree. When the ground began to freeze we dug a trench some fifteen inches wide, some three feet distant from the tree and surrounding it. Each day we went deeper with the trench as the ball of earth solidified, until reaching a depth of three feet we filled the trench with loose straw waiting some days of freezing. We removed the straw and pried the tree loose from the subsoil and then blocked the tree up on stove wood to make good the under-soil by freezing. The tree was then rolled away from its old home to the new hole previously prepared for it. Here it was rolled in, straightened, and unfrozen earth, which had been taken into the cellar for the work, filled about it, and settled with water. In the spring we leveled the lawn, and that tree never knew it had been moved.

The past late summer and early fall we have spent our church vacation Sundays drifting over our section, a lunch, a book, a friend or friends with us. We would stop at some inviting spot, feed the horses and eat our lunch near a spring under the trees. The air was almost equal to that found in the mountains. The beautiful landscape with its ever changing color from green pastures with its flocks to waving cornfields, the ripening and ripened grainfield, later the harvested fields and the stately stacks.

When alone, the farmer lady and the farmer "sparked" as in the long ago, and it did us good. We sometimes met an eyesore—country school houses and churches. Sometimes a few trees beautifully set like so many telephone poles—a walk straight from door to road. This is all wrong. A little time by a few progressive farmers, a few dollars, a woman with taste to suggest—she would transform it thus:

A curved walk, here a cluster of trees, there some shrubbery, and beds of flowers at proper places. The plainest building could have a setting that would make it beautiful.

Don't plant all the evergreens in the cemeteries. Friends, take a day off from farm work and scrub for public beauty and your own homes too!

"A fool and his money are soon parted," is an old saw. Last spring we imported from Missouri a Liriodendron Tulip tree—such as are a glory in the Ohio river land; especially when in bloom. It cost 50 cents. It has thrived this summer. It may be killed this winter. Fifty cents will get a tooth yanked out by a country dentist, but I'd rather buy a tree than a yanked tooth. If the tulip tree lives I can enjoy its beauty. So may others, and they may have one too in this Northland. If it is killed, I've lost the fifty cents, and that is the price of a yank, but I'm not longing for the yank. In the beginning we had a plan in our heads. We intended to have a productive home and also a home that would be attractive. Aside from the unseasonable seasons our "rest" spells have been short and too far apart to accomplish our desires.

Another old saw, "Fools build for wise men to occupy." We do not claim to be wise, and we intend to occupy and enjoy the results of our labors for another sixty years.

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SECRETARY'S CORNER

NO NUTS FOR SEED.—Mr. Henry Husser, whose article on nut growing was published in the October number of our monthly, writes me that he is receiving many calls for seed as a result of his article, and that he would like to have notice given that on account of the spring frosts there, no blossoms set fruit this year, so that he is unable to furnish any seed.

MEMBERSHIP FOR 1910.—The membership roll this year as it will appear in the annual report of 1910 numbers in all 3119 members, of which 2868 are annual, and 251 life members. A number of names will be yet added to this roll undoubtedly. As noted, the list is somewhat larger than for 1909, which is very gratifying to the management under the circumstances, which for several reasons have been unfavorable the past year to an increase of membership. How many new names did you as a member of the society send in the past year to assist in maintaining the present large roll?

DANGER IN THE ORCHARDS.—In many parts of the state, the ground is now so dry that if he orchards go into the winter without drenching rains there will undoubtedly be serious danger of root-killing. This can be guarded against, in large part at least, by thoroughly mulching the ground about the trees, and the deeper the mulch and the wider space around the trees upon which it is spread, the less the danger. If there are facilities for adding water to the soil about the trees besides, all the better. When one has grown an apple tree to bearing size, it represents considerable money, and it is well worth taking the necessary small pains required by the process suggested to insure its safe wintering.

WANTED, SEED FROM MINNESOTA APPLES.—There should be the coming spring a considerable addition to the list of competitors for the seven prizes of $100 each, offered by the society for apples grown from seedling trees planted within the past few years, or yet to be planted. For this purpose a quantity of seed is required, which must, of course, be from fruit grown within the area permitted for this contest, including Minnesota, northern Iowa, western Wisconsin, North Dakota and Manitoba, and eastern South Dakota. Any members who can furnish seed for this contest will confer a favor upon the society. In saving it, the seed of each variety must be kept by itself and properly labeled, so that there may be no mistake as to its origin. Members who can supply this seed, even in small quantity, are requested to communicate with the scretary.

PROGRAM FOR THE ANNUAL MEETING.—The program is now practically ready for the printer, and will go into his hands the first of November. The program is sufficiently diversified to meet the needs of all classes and and grades of horticulturists. There are class exercises in grafting, hybridizing, fruit packing, spraying, etc., so that very full instruction in these arts may be had at the meeting. Some eighty numbers appear on the program, covering the full line of fruit growing, some topics on flower growing, a number on vegetables, a few on forestry subjects, etc. While the program is made up largely of home talent, yet there are a number of representatives from abroad, of large practical experience. There are to be several lantern slide lectures, and as usual, we will dine together some evening during the meeting. Don't fail to attend this splendid meeting. Bring the wife and adult children, as far as possible. Railroad rates are low, and special arrangements will be made with some good hotel.

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PARTIAL VIEW OF EXTENSIVE VINEYARD AT EXCELSIOR, MINN., OWNED BY MR. GUST. JOHNSON AT THE TIME THIS PICTURE WAS TAKEN—NOW THE PROPERTY OF MR. F. A. AVERY.

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THE MINNESOTA HORTICULTURIST

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Value of the Grape to the Minnesota Planter.

CLARENCE WEDGE, NURSERYMAN, ALBERT LEA.

For the purposes of this paper the planters of the grape in Minnesota may be divided into three classes: the market gardener, the family provider and the grape fancier; and the list of grapes now known may be divided into two classes: the tender varieties requiring winter cover, and the hardy varieties that will endure our winters without protection.

When I received notice from the secretary that this subject was assigned to me (for it was not one of my own choosing) I asked him to give me the addresses of those who were growing the grape in some quantity in the state. Knowing something of the state of the industry in late years I was not altogether surprised in receiving only seven names of those actively engaged in that branch of fruit growing, and several of these we judge to have but limited plantations. That grape growing for the market has fallen to such small proportions from the flourishing conditions of twenty-five years ago is due to the fact that the expense of transporting grapes from Lake Erie to our markets is more than offset by the difficulties encountered in handling tender varieties in our own vineyards. Among those difficulties we would mention: First, the ever present danger of losing the whole or a considerable portion of the vineyard by root-killing in the winter. Second, the special pruning required in order to keep a vine in proper shape for laying down to receive cover, such pruning limiting the productiveness of the vine and requiring an expert to do the work. Third, the short time there is to do such pruning between the falling of the leaf and the time when there is danger of the soil freezing, which limits the size of the vineyard to the amount of expert help that can be secured during one of the busiest seasons of the year. With vines that can be left on the trellis all winter the pruning is done as a winter job at the convenience of the owner. Fourth, the expense of covering, which, however cheaply done, is, with the uncovering and tieing to the trellis, an expense in addition

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to that of the eastern grower. Fifth, the deep working of the ground on vineyards that are at all subject to wash greatly increases the loss of soil until the vines stand up on ridges dangerously subject to root-killing and doubly difficult to cover. With such handicaps as these it is not strange that the tenderer varieties of grapes have not made good in the hands of the market grower and that the commercial vineyard in Minnesota is a thing of the past.

With the man who plants grapes for his family supply of fruit the case is something the same. Few will learn the style of pruning necessary to make covering entirely practical. To the average man the work of covering comes at a time when a thousand and one other things are pressing upon his attention, and the work is likely to be neglected or forgotten. He can buy excellent grapes put up in convenient sized baskets in the market anywhere and take them home with him at any time in the season. He can have apples, plums and all the choice small fruits without any such expert knowledge or fussing, so what is the use of bothering with grapes?

It seems to us therefore that the value of the tender grape to the Minnesota planter is limited to the amateur who has the taste and leisure to supply his household with one of the luxuries of the garden. With him the skill and patience required in growing the fruit only adds to the pride and pleasure he has in presenting them to his family and displaying them to his friends. And there is truly no achievement in the garden more worthy of applause than the ability to ripen the finest clusters of the choicest eastern varieties in our northern climate. There is no line of fruit growing that brings the worker into so intimate a study of the plant he works with and that gives a more certain result for the highest skill and patience. It is a pity that more of our wealthy men and women do not seek health and recreation in such interesting rural avocations.

Having thus disposed of the bulk of the varieties now available to our planters, we will glance at the possibilities, present and future, of varieties that, as Prof. Hansen would state it, do not have to "go on crutches" in our state.

The list is short, and with the exception of one variety, and that one has had a comparatively short trial, we have personally had but little experience. The Clinton and the Janesville have had a long trial and have seemed to fail to make a place for themselves on our lists. The Beta is almost the sole variety of this class, hardy enough to stand our winters, to which we can turn with any assurance of its value and the possibility of procuring it in the nurseries. That it is healthy, hardy and productive all over the state we believe is not dis-

puted. The bunch is of good size, frequently shouldered and the berry about half way between the Delaware and Concord in size. The fruit ripens very early, so early as to escape the frosts every season for the past few years, which have certainly not been particularly favorable to the ripening of the grape. We have had about ninety-two vines of the Beta in bearing for several years and have grown hundreds of pounds of the fruit. One of the vineyards had been originally set with the old line varieties and about three of the Beta. Nearly all of the tender varieties, even under fair protection, root-killing early in their life, we reset using more Beta. The tender sorts again root-killing we reset the entire vineyard to Beta, which has stood by us up to the present time. We had intended to crown-graft some of the Beta set last with the tender sorts, a practice that would seem to be very desirable in order to get a root of assured hardiness, but the Beta itself has done so well that we have neglected to graft it. We think that our experience has established the root hardiness of the Beta beyond question, and that even for a vineyard of the old sorts it might pay to use the roots of the Beta and thus be assured against one of the dangers in planting the tender varieties when on their own roots.

For the market gardener in his home market we think that the Beta will have a considerable value for years to come. We have disposed of our surplus readily at four cents to the grocer and five cents direct to the customer, which we think is about as much as growers of the Concord are realizing. There is nothing that colors up earlier, we believe, and as the demand for half ripe grapes for jelly increases there is nothing that will fill it better than the Beta, and this will probably be the most profitable way to market it. At any rate, it should be crowded onto the market as fast as possible, for its quality will not make it acceptable to the public in competition with the eastern grapes at their best estate. One thing seems certain, that the wood from the trimmings of the vines will be an additional source of profit for some years to come, as it will find a ready market with the nurseryman.

But it is with the farmer and villager who would have a cheap and abundant supply of grapes for his family that the Beta will have its chief value. It is as easily grown as the wild grape, but will respond to good care as well as any. If in the rush of fall work it is forgotten, it will wait for its pruning till the following spring, and if the pruning is neglected altogether it will still do its best for the owner, giving more than a due return for the labor bestowed. The fruit may not be of the best, but the average family is not so fastidious as to quality

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as some of our grape connoisseurs of this society who live "out at the lake," and big bunches of ripe grapes are not likely to be neglected in the vineyard or in the kitchen of the average family even if a trace of foxiness can be detected in their flavor by the professional vineyardist. That the public was tired of the old varieties and ready to welcome something hardy is witnessed by the sales of our nursery, which before we had the Beta had fallen to less than a thousand vines per year. Now without any undue pushing we have already sold three thousand vines of this variety so far this season, and by the way our first customers who planted the variety are satisfied we have the pleasure of feeling that we have sold something that will help instead of injure our trade. We felt sure that our stock of vines would not last through the season, or we should have put out advertising matter that would have sold double the number.

With the amateur who has the taste and ambition to grow the choicest grapes, this variety has little merit except as a stock on which to work his tender varieties. As compared with the Brighton, Delaware and Campbell's Early, the Beta will stand somewhat as the Hibernal will to the Wealthy apple. I think that if we had to lay down our Wealthy trees and cover all of that class of apples, we should immediately place a higher value on the despised Hibernal.

But we will not close the paper without mentioning what we regard as one of the chief values of the variety that we have given such a prominent place in this paper. It is as a stepping stone to something better that we shall finally find the greatest value of the Beta. In it we have every needed attribute but quality, and that we can be sure of infusing by a cross of the best of the old line varieties, just as Rogers infused something of the quality of the European grape into the eastern sorts in making up the splendid line of varieties originated by him. The state fruit-breeding farm, under the superintendence of Mr. Haroldson, has already planted thousands of seedlings, the result of such crossing, and from them we have the best of reason to hope for some varieties that will embody the happy combination of hardiness and quality. If one such variety, just one! should come out of this investment, it would be worth to our state alone the cost of maintaining the farm for a hundred years.

Mr. E. F. Pabody: I was very much interested in the paper and agree with most of the statements made. There is no doubt that commercial vineyards in this state are becoming a thing of the past. Twenty years ago on the shores of Minnetonka we thought the raising of grapes could be made profitable. I put out a vineyard of three thousand vines. No finer grapes were ever raised. The Delaware is

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the best grape I have ever eaten. We found it was impossible to compete with eastern growers. I never had a vine die of any disease such as root-killing or rot. My vines were in splendid condition, but I found it was impossible to compete with eastern growers where they did not have to trim their vines, cover them during the winter and take them up again in the spring. Commercial vineyards are a thing of the past in Minnesota. I would not entirely agree with Mr. Wedge in regard to the average farmer having grapes of tender varieties, but if I were on a farm or a city lot, or in a suburban home, I would certainly have some of those tender varieties. I am growing some two dozen vines, and I think I can prune and cover those vines in a half day, and I can uncover and tie them up in the same length of time. I would not be without those grapes if a great deal more time had to be expended on them. I think every farmer, for the benefit of his children, ought to have grapes to eat. They can be raised in large quantities and without much trouble. I do not think the Beta will ever take the place of the more tender varieties.

Mr. Hunter: How are those seedlings of the Beta grape doing?

The President: We have not made much progress, but we are going to get something good.

Mr. Ellison: Does the Beta grape make good grape juice?

The President: Yes, I think it is better than the Concord.

Mr. Ellison: Does it make any difference whether it is covered or not covered in the winter in regard to fruit?

Mr. Wedge: We made some experiments in covering the Beta, and we could see no difference in the fruit between those covered and those uncovered. It is a very productive vine anyway. I want to say that we make quite a quantity of grape juice each year. It is not equal to that which can be made from the choicer varieties, but, such as it is, Mrs. Wedge has offered to give you a chance to sample it in the fruit room at any time.

The President: A number of years ago, when we first began introducing the Beta, I had only five vines, and I weighed the fruit from those five vines, and it averaged forty-five pounds apiece.

Mr. J. K. McBroom: How is the size of the seed of the Beta in proportion to the pulp?

The President: The seed is small.

Mr. Benjamin: I have a large number of Beta, and they are doing finely.

The President: Do you sell the fruit?

Mr. Benjamin: Yes, sir.

The President: People buy the fruit; there is no trouble about getting rid of it.

Mr. Benjamin: I have sold probably three hundred pounds.

The President: Some people object to the quality of the Beta. I know a number of years ago I distributed a lot of them among our

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students, and every time I met them I would say, "Is the Beta good enough to eat?" and they would say, "Why, yes, of course it is. Why do you ask such a question?"

Mr. Benjamin: I have allowed some to go up a tree and left them without any trimming. I was surprised to see the amount of fruit they bore.

The President: But the bunches were small?

Mr. Benjamin: They were as large as any I saw that were pruned. My wife makes a lot of grape juice, and we use it with ice water. It makes a very nice drink in hot weather.

The President: I would not say it was equal to the Agawam, but to me it is far better than the Concord.

Mr. Little: We have them growing on our porch, and they do finely.

Mr. Harrison: We have a lot of wild grapes, and I was thinking of crown-grafting.

The President: That is all right, but it is rather unnecessary, the Beta grows so easily from cuttings.

Mr. Harrison: I thought perhaps it would make a difference in the grape.

Dr. Huestis: I have a vine at Minnetonka that bears a great deal of fruit, and we make a great quantity of jelly. It seems to be entirely hardy. Some years I have covered them and some years I have not. It does not seem to make any difference whether they are coverd or not.

Mr. A. W. Latham: There is a prospect for the revival of the commercial industry in grape growing, and we are looking forward to the time when these crosses of the cultivated grapes with the Beta and other varieties will come on the market. Our grape growers are handicapped by being compelled to cover their vines, and since New York grapes came into the market the industry has not been profitable in this section of the country. I was a large grower of grapes at Lake Minnetonka, but on account of New York competition we were in a position where we had to take such low prices for our grapes, although they were superb in cluster and quality, it was no longer profitable to grow them commercially. The New York grapes were gotten to this market at about the cost of shipping them in from Excelsior. They are shipped from New York by freight by the carload, at the price per hundred we pay by express from Excelsior. That was something we could not overcome. The Delaware grape can be grown with profit and bring a better price than the Concord, and the soil and climate around Lake Minnetonka are especially adapted for growing the Delaware. It is a grape that does not need as much care in the summer; it attaches itself to the trellis, it does not require so much pinching, and is not often a failure. There is some difficulty with the downy mildew, and the vines must be sprayed frequently in order to keep that down. There are one or two commercial vineyards out there that are still growing grapes, but many of the old vineyards have been dug up. They are still growing some superior Concords by practicing the method of summer pinching. You can raise the finest grapes in the world by that method, and those that do grow them at Minnetonka succeed in getting a little higher price than do the New York growers.

My Gardens.

A. J. PHILIPS, WEST SALEM, WIS.

For the purpose of giving me a little more sea room, I have added an "S" to the subject that Mr. Latham gave me.

A man writing from Pennsylvania last summer on "Farmers' Gardens" said, "No trees should be planted in or near a garden." That to me would destroy the delight and pleasure I have in my garden. I would not stay there long if I had no trees or flowers in it. Associating with a few rows of peas, beans, carrots, tomatoes, cabbages, potatoes or corn is not lasting enough for me. One season, and they are gone; they bring and take away no fond memories or recollections; they do for the table but not for pleasure. I like something mixed in more permanent and more abiding. I can pull weeds better and hoe the ground more easily around the plants if I can straighten up once in a while and look at a tree or flower.

When hoeing or planting vegetables I occasionally, and sometimes oftener, look up and gaze at, and admire, a beautiful blue spruce that my friend, Clarence Wedge, sent to me. A little farther on near the street I see two evergreens that the once plain "Tom", and now the Hon. T. E. Cashman, sent to me express paid. Then back of these a row of fourteen peonies stretches across part of the garden. In supporting a family a row of potatoes would pay better, but in real pleasure the flowers are better. To a visitor these peonies all look alike, but to me (for this is *my* garden) they look different, for the second one from the east end is a beautiful red one, that I dug out of the bank near the door of Peter M. Gideon's home some six weeks after his death. I carried it home, by his son's consent, as a remembrance of Uncle Peter. I see in it, whether in bloom or not, scores of memories of him, his wife and his great work for his own and other states of our nation. I could stop here and have plenty to think about for one summer.

I step only ten feet from this row over two rows of peas and a few hills of potatoes to the end of a tree row that contains the Opata, the Sapa and some six other varieties of Prof. Hansen's new productions of crosses of plums and sand cherries. These take me over his great grounds at Brookings—I mean in memory. Then I come a few steps to the south to two or three nice top-worked trees of the Moran, a great annually bearing winter seedling apple. Then memory takes me over a ridge to the residence of the originator, who shows me his well worn Irish Bible, the gift of his mother. Then a little to the west are several top-worked trees, on Virginia stock, that speak to me of

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the veteran Grimes, because he sold me my first Virginia stocks. Then I come to one that to a visitor looks like the rest, but to me it carries a thousand pleasant memories, for most of the top is the Sugar Loaf, one of Father Yahnke's special pets. It bore five apples last season, and I never pass it without a feeling of reverence for its originator.

Next to that is a sweet Fameuse, a seedling sent me by Dr. Loope, which reminds me of his great orchard, his kindly disposition and his "Frog" songs, which we older ones remember so well. Then I see four top-worked Ben Davis, which bear lots of apples. They are all the

A. J. Philips, West Salem, Wis.

line fence there is—and I get a part and my neighbor gets some. Of course they are not very good, but they make me think of the veteran, Wm. Oxford, who furnished the scions, and they remind me of the ups and downs that poor old "Ben" has had—in his career.

Next I see the first Surprise plum tree that I planted, and that takes me to the old Vendome, where I slept with its originator, who told me its history in the dead hours of the night. This hotel has its memories, for in it I slept or tried to sleep in a room with Father

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Dartt and the only Edson Gaylord. In this hotel I saw a member turn a cold shoulder to my friend, Clarence Wedge, which I never saw before or since. Passing on a little farther I find three quite large Compass cherry trees; they bear plenty of good fruit in dry seasons, but in wet ones a good share of the fruit rots. These trees stir up memories of discussions, lawsuits and other luxuries.

Next in line is my largest Yahnke tree, and it is a beauty. Around it cluster more memories of the past. I have been accused of recommending it too strongly at meeting, but I remember what I said, and I stand by it, too. I always said if it proves as good in other places as it is at Yahnke's home grounds it is a valuable acquisition to Minnesota's orchard trees.

Next I come to an Okabena tree growing nicely, which takes me back through the Underwood home and nursery to the memory of a three days' visit at my home with the veteran P. A. Jewell and his estimable wife, whose remains lie in the quiet cemetery at Lake City, Minn. Then another fine Surprise tree, and I turn another corner and see three beautiful trees of Brown's Gem Winter. These are fine growers and with the handsome, long keeping fruit they bear are destined to be a valuable acquisition to the useful varieties of apples for the Middle West.

Then turning again I come face to face with the memory of that grand old man and sincere friend, O. M. Lord. As I see growing nicely beside the fence two of his pets, to-wit: Lord's L., an apple tree, and a fine Brittlewood plum tree, then I also think of my young friend Strand, who has improved so much since he found a wife. With these trees come more memories. The late S. M. Owen and his good deeds, and his devotion and love for those veterans, Lord and Harris, come fresh before my mind's vision.

But too much garden is not good, so I will close, but not until I cross the driveway and see a great bunch of variegated roses, the start of which was sent to me by mail from that grand orchardist, A. D. Leach, of Excelsior. Then my beds of dahlias, some of which were sent by Mr. D. W. C. Ruff, of St. Paul; then pansies, salvias and white alyssum from Pres. Toole, of the Wisconsin Society. Then last but not least two fine trees, which I prize highly for a dooryard tree, to-wit: Lyman's Prolific—and these bring more memories. And now, Brother and Sister Horticulturists, do you, or can you, envy me the pleasure and profit I get out of my garden?

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Varieties of Apples.

A DISCUSSION LED BY J. A. HOWARD, HAMMOND.

Mr. Pabody: What do you consider the best apple?

Mr. Howard: I would plant largely of the Duchess and Wealthy in this vicinity, but if you have to ship them a hundred miles, I would grow something other than the Duchess, but being close to the city I would plant largely of the Duchess.

Mr. Philips: Shall we grow the Northwestern Greening and call it a winter apple?

Mr. Howard: Yes, top-worked I would.

Mr. Philips: Would you put it in the list of five of the best apples for a commercial orchard?

Mr. Howard: Well, now I tell you I have a favorable location.

Mr. Philips: Answer yes or no—that's what the lawyers tell you when you get into court.

Mr. Howard: No, as an orchard tree, I would not put it in.

Mr. Philips: Would you put it in the list of the three best apples?

Mr. Howard: No, sir, I would not. I would put it in the list of five, provided you top-worked it, but as a tree in the orchard, I would not set another one.

Mr. Pabody: Is it not better to have only one commercial variety, say the Wealthy, than to have four or five?

Mr. Howard: I would sooner have two or three varieties that would continue through the season.

Mr. Pabody: Name three varieties you would consider best for a commercial orchard.

Mr. Howard: Duchess, Wealthy and Patten Greening if I were close to the city.

Mr. Sahler: What would you say if you were a hundred miles away from the city?

Mr. Howard: If I was on a spur line of railroad, and it took a week to get them to the market, I would not plant the Duchess. You cannot afford to ship by local freight unless you can get them to the market at once.

Mr. Sahler: Does not the Northwestern Greening stand shipping as well as the Wealthy?

Mr. Howard: The Northwestern is not as good a tree as I would like. I have tried it twice, and they have gone out.

Mr. Ellison: I have a few in my orchard, and they are doing well.

Mr. Howard: Top-worked, it is showing fine. I have it top-worked on four or five different trees, on the Whitney, Hibernal, Martha crab and others, and I have one of the oldest grafts I know of; it is seven or eight inches through the graft, and it bore three barrels of apples this year.

Mr. Sahler: How does the Patten Greening keep with you? Have you noticed?

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Mr. Howard: It does not keep as well as the Wealthy.

Mr. Brackett: Here is a man who says he has one he would not sell. I want to ask him how long it has been in bearing.

A typical mature Wealthy in full fruitage in J. A. Howard's commercial orchard at Hammond. Mr. Howard is holding out a handful of his favorite apple.

"The Man:" It has borne two years.

Mr. Brackett: In about two more you would not take five cents for it.

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"Another Man:" I have one in the orchard, and anybody can take it away if he wants it.

Mr. Kenney: I have one Northwestern Greening, top-worked. I consider them as hardy as oak.

Mr. Howard: They are all right top-worked.

Mr. Ellison: They come into bearing quicker top-worked than they do on their own stock.

Mr. Howard: It will take them five or six years to come into bearing top-worked, and about eight years on the tree.

Mr. O. W. Moore: In some localities the Patten Greening is giving satisfaction, in other places it is not. I had some fifteen trees this year that had two or three barrels to the tree. They commenced to drop off at time of blooming and kept it up until harvest time. I have a corner of them top-worked, and the rest of them are going to get it.

Mr. Probstfeld: I have come to the conclusion that this apple question depends a good deal on the locality. In one place an apple does well, in another it does not. I have the Patten Greening; it is a steady bearer and a good keeper. It does not bear such a heavy crop, but they hang on well to the tree; they are a nice, smooth apple, a beautiful looking apple, they are a good keeper and a good shipper.

A Woman and Her Roses.

MRS. H. B. TILLOTSON, MINNEAPOLIS.

The first thing to be considered in starting a rose garden is its location, which should be well drained, have the full sunshine and not be very near large trees or shrubs. You may decide how near by their height. The roots of a tree are said to extend as far underground as their branches are high in the air.

The next thing is the soil. Roses will give fair results in almost any good garden loam, but of course the more food they get the finer the roses. The best fertilizer is well rotted cow manure, either in liquid form or dug in around the roots. I always put a large shovelful in the bottom of the hole before planting. Do not allow the roots to come in direct contact but have it near enough to be reached after they begin to grow and are strong enough to assimilate such food. They should also have some yellow clay; it deepens the color, holds the moisture in dry weather and keeps the roots cool. The ideal soil for roses is one-fourth clay, one-fourth sand, one-fourth well rotted cow manure and one-fourth peat or wood's earth—all well mixed.

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In selecting roses each one must consult his own tastes or needs, I like all of them, but these are my favorites: Frau Karl Druske, pure white; Mable Morrison, white tinged pink; Clio, white with a decided tinge of pink. There seems to be two kinds of Clio: some are pure white, others are a creamy pink. Perhaps it is due to location or the presence of yellow clay.

La France, silver pink; Mrs. John Lang, shell pink; Mrs. Sherman Crawford, about the same—both very lovely and good bloomers; Madam Gabe Luset, clear pink; Anna de Diesbach, clear pink—scarcely ever without a rose or bud, either of them; Paul Neyron, deep pink—the largest rose blooms spring and fall; Victor Verdier, cherry red; General Jack, well known and not liked by all because it loses its color the second day. But what do you care, there is always a new rose; it really blooms every month, if fed. Ulrich Bruner, deep red; Black Prince, deep velvety red; and Baron de Bonstetten, the darkest rose.

Of the climbers these are the best: Climbing Frau Karl Druske—cannot say it is perfectly hardy, but at least it is perfectly beautiful; Baltimore Belle, Prairie Queen and the Ramblers. The white and yellow Ramblers are not as satisfactory as the pink (Dorothy Perkins) and the red, which is magnificent. Dorothy Perkins comes after most other roses are gone and is a perfect mat of bloom for two weeks or more.

Then there is the blue Rambler, to be offered in some of the catalogues this spring. It is a seedling of the red Rambler and much like it in every way, hardy and husky and strong, but blue. With this last color added to our list, we can be very patriotic.

There are many beautiful hybrid teas, but in Minnesota they are not hardy unless wintered in the cellar.

When you receive your roses from the nurseryman, if dry, some say heel in or cover entirely with dirt for a day or two, but I put mine in a tub of water for two or three hours, or until they are well soaked, before planting. Dig a hole large enough to admit the roots well spread and put in a shovelful of manure, then six or eight inches of dirt. Place the rose a little lower than it was in the nursery and sift a little dirt around until half full. Press down gently, add more dirt and if dry a little water. Fill the hole and tread down hard with the feet. Prune back to about eighteen inches and let it alone for awhile. Mulch during the hot weather if you have no facilities for watering. Keep out the weeds and cultivate when the ground gets hard.

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The surest way to keep off the pests is to spray or dust with white hellebore on damp mornings, first just as the young leaves are coming out and twice afterwards at intervals of two weeks. This will keep off most of the troubles, but if you should have leaf spot, spray with bordeaux mixture. For mildew use powdered sulphur. For the rose bug and slugs there is nothing but hand picking. For aphis use tobacco water. Healthy, well fed roses are seldom bothered with pests—at least not more than one. You could not possibly have all of them, but anyway you can see what to do.

This brings us to the fall care. Prune out all the weak shoots, but leave more strong ones than you want, for some may not live through the winter. It takes lots of courage, but I cut them back to about two or three feet high. You must do it if you want quality instead of quantity.

Then the covering. First loosen the dirt around the roots, and bend carefully over onto a bed of leaves or straw—be sure no water will stand around them—and peg down. Cover with more straw or leaves and over this place another covering of boards or building paper, anything to keep them dry. It is not the cold that kills them but the thawing and freezing. With this care they should sleep well and abundantly repay all your trouble the following summer.

An Experience with Frozen Apples.

ROBERT C. WEDGE (WEDGE NURSERY CO.), ALBERT LEA.

Before I take up this topic I want to say that, as the title implies, I have had only one fall's experience in this line, and I am sure that many of you have had a similar experience with the later apples freezing and no doubt could present the topic in a more useful and entertaining way.

The question was asked by some one at our Wednesday morning session, if it hurt apples to freeze a little. It is hard to say, but it is my opinion that any freezing hurts the fruit. The extent of the injury depends not so much on the amount of freezing they are subjected to as upon how they are handled while frozen and how and under what conditions they thaw out.

The whole matter is more or less of a puzzle to me. For instance, the Malinda picked while frozen, put in piles in a shed and covered with hay, were when thawed out absolutely worthless; while apples left on the bare ground under these same trees, which must have frozen and thawed several times were practically uninjured. We

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picked up some Wealthy which had fallen at picking time and had frozen on the ground. These were put in piles in the orchard and covered with hay, but they came out in no better shape than the Malinda.

There seems to be a great difference in varieties as to how they stand freezing. Jonathan, Northwestern Greening, Talman Sweet and Ben Davis were all treated the same as our Malinda, that is, put in the shed and covered. Talman Sweet and Ben Davis were no good, while Northwestern Greening and Jonathan were not injured so much but were nevertheless in pretty poor shape.

Quite a number of varieties were picked while frozen and put in our packing house and left standing uncovered in baskets. Of these, the Sugar Loaf was apparently uninjured; the Windsor Chief looked good, but their flavor was spoiled, tasting more like potatoes than apples; Golden Russet was as good as ever in quality but looked as though it would not keep long. In this same lot were Twenty Ounce Pippin, Phoenix Russet, Pound Sweet, Yahnke and several other varieties, all of them injured more or less except the Sugar Loaf. We had some Wealthy that froze in barrels. These were put in our storage cellar, where it took them several days to thaw out. These so far as we can discover are uninjured.

I have talked with several parties who experimented with frozen apples last fall, and most of them tried about the same experiments we did with about the same results. One tried putting them in water, but that didn't help. All of the apples I have mentioned were frozen solid; I have had no experience with slightly frozen fruit.

Judging from what little experience I had this fall I would advise leaving the frozen apples on the trees, but if you are determined to pick them I believe the best treatment is to put them in baskets uncovered in a place where it will take them at least four days to thaw out.

One might naturally think that the apples would stand pretty rough handling while frozen without showing bruises, but they bruise exceedingly easy.

If any of you think that it would be fun to pick apples in freezing weather, just try it, and after seeing how the fruit turns out I feel sure that you will come to the same conclusion I did, that it pays better to leave them on the tree—although, as I said, it might pay to pick slightly frozen apples.

Mr. Schutz: Do you leave the apples on the tree until they thaw out and then pick them?

Mr. Wedge: I did not leave them all on the tree, but those that were left on the tree were not good.

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Mr. Clarence Wedge: You mean you threw them away.

Mr. Robert Wedge: Yes, threw them away.

Mr. Gordon: I had only one apple I wanted to keep. I left it on the tree too long, and it became frozen. I put it in water to thaw out, but it did not amount to much. Some of my neighbors had the Longfield, and when a freeze came they lost them.

Mr. Poore: Why would it not do to scatter them around under the trees and throw some straw over them?

Mr. Wedge: We tried putting them in piles and covering them, but they came out in pretty poor shape.

Rev. Harrison: Bury them in the ground and let the ground take the frost out slowly.

Mr. O. W. Moore: I had a little experience along this line this fall. I had a few bushels of Northwestern Greenings freeze solid on the tree because I did not take them off before the freeze came on. I picked them after freezing, put them in the cellar, let them thaw out gradually, and they were about the same thing as worthless. All my Malinda were on the trees at the time the freeze came. I made no move at all to get them off. I simply let them remain to thaw out on the trees, and in about a week after that I picked them and put them in the cellar, and I could not see they were injured in the least, and they do not show they were frozen now.

Mr. Benjamin: We picked a few bushels of Northwestern Greening this fall, and there were a few bushels left in the orchard, and we covered them with a white cloth. I did not know they were there, but they thawed out slowly and today they are just as fresh and nice as if they had been picked before the frost. Some Malinda that we picked some six weeks ago are apparently uninjured.

Mr. Crane: Would it not make a difference if the apples were separated and given a chance to dry, because when they thaw they would naturally become wet?

Mr. Wedge: I don't know that that has anything to do with it. It seems as though apples in piles and covered would be about the same as apples in a barrel. Those that were in barrels and frozen came out in good shape, while those in piles did not.

Mr. Sahler: Here is an apple called Faribault, and this is one tree I could not get at to pick, and they froze through, and they kept until spring.

Mr. Kenney: I had about a hundred and fifty bushels of Malinda that were frozen. On the 13th of October the thermometer went down to seven degrees below freezing, and I found a few of those apples all right, but some of the very best apples were very much frozen so I could not pick them. I left those apples on the tree a few days until they were all thawed out, and then I went to picking them. I do not think the apples kept quite as well as if the frost had not touched them—they were all somewhat colored around the seed. Those that were scattered on the ground were not materially injured. I sold a good many barrels of those apples, and I kept some until within a few days ago.

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Mr. Chapman: There was a plate of apples on exhibition recently at a farmers' institute that looked very fine, and when I questioned the exhibitor about those apples he told me he picked them up under the snow, and when I examined those apples I found they were Lyman's Prolific. I thought that was a pretty good thing, to grow crab apples up there that would keep until this time in good condition; that was up in Todd County, Minnesota.

Mr. Sahler: They are frost-proof.

The President: They were kept from freezing under the snow.

The Okabena Apple.

H. J. LUDLOW, WORTHINGTON.

I am asked to give a history of the Okabena apple, of which, in the program, I am represented as the originator. That is a mistake; I only named it and introduced it. Mr. G. J. Hoffman, of whom I

The original Okabena apple tree, from photo taken in Sept. 1910. It bore "fifteen bushels of choice fruit" this season, "and the tree is loaded with fruit buds for another crop."

bought the farm in 1882, bought the seed of Mr. Peter M. Gideon, seven years before, in 1875, who claimed every seed was from either Duchess or Wealthy apples, and the fruit in size, color and keeping proves this to be so. The tree is even hardier than the Duchess. It

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is a very early bearer. The old tree commenced to bear at three years from the seed and has never missed a crop since, and those I grafted onto the same lot of seedlings the old tree came from are keeping the old tree company every year. For the past seventeen years it has averaged at least twenty bushels of good, marketable fruit every year. In 1906 I sold from it thirty-one and a half bushels at $1.20 per bushel from it and fed between eight or nine bushels of culls to my hogs.

A noble Okabena apple tree, the property of S. J. Evans, La Crescent.

The old tree now has a spread of limbs from tip to tip of forty feet and the trunk measures in the smallest place, two feet from the ground, forty-eight inches around the body. I have always shown the fruit from the tree at our county fair and sixteen years ago at our state fair, when it took first premium as the best seedling apple grown in the state. Neither the old tree nor its grafts that I have have ever shown any signs of blight. Four years ago I put out an Okabena tree (root-grafted) three years from the graft, and it matured fifteen apples that first summer. I took five of the best to our fair and took first over twenty-two plates I had to compete with. In 1888 I sold

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the right to propagate the Okabena apple to the Jewell Nursery Co., of Lake City, for $1000.

What's the matter with the Okabena apple?

My sister has a tree of it that is doing nicely at Devil's Lake, N. D. It bears every year. I had two other varieties, one of them named the Wax and the other the Daisy, and both of them are better eating apples, to my notion, than the Okabena; but they are not as hardy, and of course you cannot make an apple tree grow in this country unless you have the climate suitable to it. When a tree is young you do not know whether it is good for anything or not. The Wax is entirely dead, and the Daisy is still living but only on the outside. It still bears every year and is the best eating apple we have in the orchard. I am having a lot propagated to see what I can do with them and to find out whether they will winter-kill.

Prof. Robertson: Does the Okabena blight with you?

Mr. Ludlow: Not a bit.

Development of Natural Resources for Park Use.

CHAS. H. RAMSDELL, LANDSCAPE ARCHITECT, MINNEAPOLIS.

To better understand our subject, let us begin with its definition. "Natural resources for park use" covers as broad a field as the open question of, what makes a good house. A piece of land of good natural park resources is one containing something typical and attractive, with a definite advantage over the usual, or one which is always remembered in its connection. It may be of historic character, as a battlefield or an Indian camping ground; it may be a natural feature, a fine stream and view, or a gentle valley, with its graceful curving lines; it may be an artificial condition due to man's presence, accessibility, the crowded neighborhood, or even to stop further commercial advancements. Any of these may be desirable resources for park work.

The most successful park designer is one who recognizes these advantages, though slight at first, and then adds to them to enhance their value. If the mountain view is fine, it may be made finer, by cutting some intervening trees. The meadow may be a beautiful greensward, and perhaps a bordering lagoon would give us some attractive water reflections. Some historic old oaks perhaps would be benefited by the removal of the vigorous undergrowth. These are all features of park value. I remember a certain professional man developing the attractions of his ancestral homestead. In the course of his work, he secured title to a fine group of large pines, even

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though on another farm, and more than a mile distant. But the view of these old forest monarchs, as a natural resource in the view from his own doorstep, was well worth the cordwood value, which the farmer asked as payment therefor.

The typical natural feature is usually the most valuable park resource. If we are near the shore of Lake Superior, a view of fifty miles before us, do we want to be distracted by a little pond fifty by one hundred feet. The little shrub bed is lost in the shade of the old oak grove—and let us hope it will fade away altogether, leaving the picturesque, gnarly old trees the feature of that spot. I know of a certain Kansas prairie village of pioneer days where the ending of most of the pleasure drives of that section was a grove of six inch trees. Now most of us would not go far to a grove of crooked small box elders. However, the people went naturally to the place where the prairie monotony was broken—and there you have a small park possibility, with one interesting resource to attract.

There are few places where no such attractions can be found. The little river affords good boating and skating, with shady nooks for reading. Why should we go up to the level town site, pick out a block in the dark, perhaps, and spend good money trying to make a distinctive park? What is more, the little river is being abused—dumping is there convenient, and the barnyards extend thereto, because of the ease of watering cattle. Which is the natural resource, the little river or the block where the trees are planted with the surveyor as the adviser? Not that the city squares and block parks are wholly undesirable, for they are valuable resting spots and breathing places for the city population; but it is hard to imagine them the most valuable natural resource of any town site.

Now, if the little river is kept clean, the shores attractively planted, paths running along its banks, landings at accessible points, there you have a little park site, natural and attractive. Two chances to one, you will already find the river trail, for boys and hunters can often tell of more beauty spots than all the park board of the town together. Perhaps the hillside above the depot is losing its trees for firewood for the boys. On picnic days, we have to go far to find a spot; on the other hand, a good road to the grove, a well, possibly a picnic kitchen and a few swings—then your park will be crowded, many going on foot, who could not ride long distances to the countryside. Another city may have a swamp in its midst, full of mosquitoes, tall grass for fires, and a fine lot of tin cans. Try a few lines of tile drains, some steps thereto, a few fences, and a general cleaning up. The small boy will be there for play before you are through, and you

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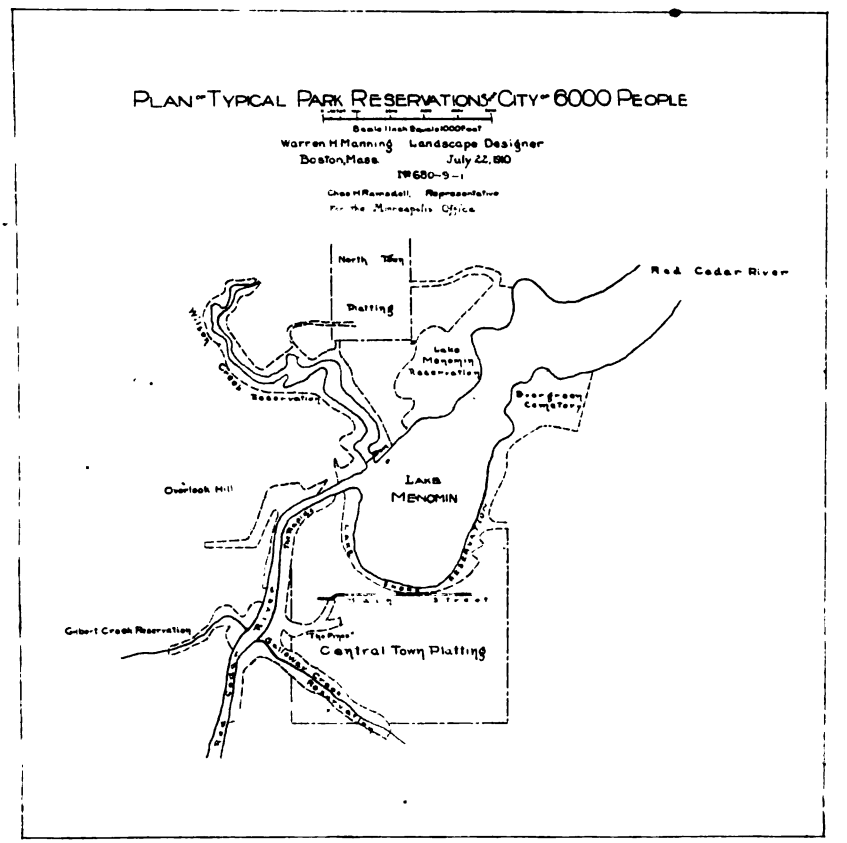
will wonder where the players all came from, and where they played without your park.

Another reason and perhaps a greater: these vacant places are generally the plague spots of the city. The dump wagons go as naturally to the lake shore, the river bank and the creek bottom, as ducks to water. Thus they become public nuisances, values depreciate in case of sale, and the spot instead of being a natural resource to the



town becomes a reproach to all concerned. A certain boulevard in Kansas City is located in a former creek valley, once surrounded with the poorer houses, and fast becoming a menace to the health of better neighborhoods. The park board bought it, built a fine boulevard through it. Then the poor houses had to go because of assessments, and now the homes on this parkway are of better character than those of surrounding localities. The real estate man may be very shrewd in selling such poor land for park use; however, he is thus benefiting

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surrounding property by placing the most abused spot of the neighborhood in the hands of those least likely to misuse it.

As increase of population brings larger funds for park use, then the little parks will be combined into a system of reservations, narrow strips along the waterfronts, hilltops, etc. If definite plans are followed, then large holders of abutting property may be induced to donate for park use. It has been proven that such owners can well afford to donate a tenth of their property for park use, when the gift will add more than this amount to the remainder. And what more lasting memorial to a friend or family than park lands can be made, always increasing in value, while the memorial building requires constant care, with the natural deterioration as well. The family of Swope will be the pride of Kansas City as long as its 800 acre Swope Park is used by the public.

Look to the commonplace for your beautiful spots. You may have skated over the old mill pond when young, you may have helped to clear out the brush in the pine grove at the fair grounds—but don't let the boys and others as thoughtless abuse them while you buy a tract six blocks square, flat and true to line, and then go to New York and Chicago for ideas of attractions for your public.

Apple Trees for Street and Ornamental Purposes.

FRED COWLES, NURSERYMAN, WEST CONCORD.

After seeing a photograph of some apple trees on our streets at West Concord, our secretary wished me to write a paper on this subject. I might tell first how we came to set these trees. A man came to me and wished to know what I would recommend to plant outside of the sidewalk. He did not like box elder or cottonwood. I told him the finest tree that I knew of was an apple tree. You ought to have seen him look. His first objection was that the boys would get all the apples and destroy the trees, but I told him he would then have more than he got from box elder or cottonwood, as he could enjoy the blossoms, and I did not think the boys would harm the trees. So he took the trees and planted them. They looked so well he got his neighbors to do likewise, and that spring we got a nice lot of trees set out. Of course there were doubting Thomases in our town, and they tried to discourage us, but they could not succeed, and as time passed on and the trees were doing well, others were planted, and as these first planted commenced to bear people began to see it was a success, and they began to grub out their cottonwoods and plant apple trees.

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Now the varieties that I have recommended were Whitney, Wealthy, Peerless, Kaump and Duchess. I recommended the upright growers, and the hardiest varieties. Just imagine the beauty of these trees in the spring in full bloom extending several blocks, and then again in autumn as they are laden with nice, luscious fruit—and how the children of this town must enjoy them! A boy destroy one of these trees? I guess not. They would fight for those trees. I have never seen but one limb broken on any of these trees, and that one not large enough to harm the tree.

Apple trees bordering the sidewalk at West Concord.

I understand that in New York state there are apple and cherry trees planted for miles by the roadside. Why not plant them in Minnesota? What is more beautiful than a nice, well pruned apple tree as an ornamental tree in any yard. In West Concord we have at least 100 of them planted outside the sidewalk; and most of these trees are bearing; some have been planted ten years, and not one has died yet. One man had nine trees outside the sidewalk, and after the children got what they wanted and the family used from them all summer, he picked nine bushels. Another man had eighteen trees. He sold twelve bushels after supplying two families, and the boys had all they could eat. These trees averaged at least two bushels to the tree. So you see they are profitable as well as ornamental. Plant an apple tree for beauty, for the children and for profit!

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Mr. Tingley: Do they blight any on the street?
Mr. Cowles: No, I have not seen any blight.
Mr. Tingley: The Peerless does well on our streets.
Mr. Ellison: How high do you trim those trees?
Mr. Cowles: So one can pass under without hitting the head.
Mr. Eliot: How close together?
Mr. Cowles: About sixteen feet.
Mr. Eliot: Are they all growing?
Mr. Cowles: I noticed them a short time ago, and they were all doing well.
Mr. Harrison: Do the boys try to knock the fruit off or do they just try to pick it up?

Peerless as a street tree at West Concord.

Mr. Cowles: They take pride in the trees and do not knock off the fruit. They would fight for the trees.
The Secretary: They must be a quarrelsome lot down there.
Mr. C. S. Harrison: I am acquainted with the superintendent of the Old Colony railroad; he is a large planter. He said he was going to put in some flowers, and when he planted them he said to the children, "You must not touch these flowers," and they were so interested that he gave each one of them a flower in a tin can to take home, and he said there was not a safer patch in the city than that flower bed.
Mr. Cowles: People who at first objected to planting apple trees on the street are encouraging it all they can.

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Insects and Fungous Diseases.

A DISCUSSION LED BY PROF. F. L. WASHBURN, STATE ENTOMOLOGIST.

Mr. N. E. Chapman: Potato growers are reporting that paris green varies a great deal in quality, and they are inquiring how they can get it cheaper and of a uniform quality. Cannot the state co-operate in purchasing it?

Prof. Washburn: We could hardly do that.

Mr. Chapman: The state is co-operating in buying dynamite to blow up stumps with. Why can't it do the same in the matter of buying paris green?

Prof. Washburn: That is beyond me. We have said good-bye to paris green. We are using arsenate of lead; it remains on the leaf a long time and never burns the foliage.

Mr. Chapman: The potato growers of the Northwest are using paris green.

Prof. Washburn: Yes, they are, but that is because arsenate of lead is new and not well known.

Mr. Chapman: Shall we advocate that from the institute platform?

Prof. Washburn: Certainly. We use it altogether at the station.

Mr. Hanford: How much do you use in solution?

Prof. Washburn: We use from four to six pounds in 100 gallons of water. That is a good deal stronger than paris green.

Mr. Husser: Arsenate of lead is superior for potatoes. Last year we used it, and we did not burn any of the foliage on the potatoes.

Mr. Clarence Wedge: It sticks to the leaf.

Prof. Washburn: One farmer complained to us that the paris green he used was burning the potato leaves and not killing the bugs. We found a sample of this to be all right. The fault frequently lies with the potato grower and not with the paris green.

Mr. Chapman: Probably he used cold water right out of the well.

Prof. Washburn: We always use cold water.

Mr. Chapman: We recommend that it be pumped for a while.

Prof. Washburn: I don't think that makes much difference. Any other questions?

Mr. Husser: In California they had to stop using arsenate for spraying trees because the drippings killed the roots of the trees in the ground.

Prof. Washburn: In experimenting this year to find whether we could poison a tree, we used arsenite of soda, arsenate of lead and paris green. In this test we conducted we used about eight or ten apple trees and as many plum trees. We dug a hollow around the base of the tree and poured in a gallon of the mixture each time. We tried, as I told you, paris green and water, bordeaux and arsenate of lead, bordeaux and arsenite of soda, and arsenite of soda alone. We did not find that any of them poisoned the trees here. I do not think we need fear anything of that kind in Minnesota. Ordinarily, spraying will not poison trees, that is, by absorbing the arsenic through the roots, poisoning or injuring the tree, injuring the bark, making

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the tree sick or killing it. In the west they have some alkali land, which may have an influence, but here I don't think you would find the effects of spraying what you might find it to be on those lands in the west.

Mr. Husser: Does the alkali and the arsenate form a combination that injures the plant?

Prof. Washburn: The alkalinity of the soil would render more soluble the arsenic in solution, but we have no soil here that will do that. Out on the Pacific coast where those experiments were tried, they do make a great deal of talk about trees being killed by spraying, but there they have an alkali soil.

Mr. Husser: I have seen apples on trees on which there were a half dozen big warts on each apple. Can you tell what caused that?

Prof. Washburn: It would be hard for me to tell what that is without seeing it. The plum curculio stings the fruit, but I don't know exactly what you have in mind.

Mr. Husser: The apple forms all right in the beginning, but it grows irregular in shape; it grows to full size, but when it is full size it has no shape whatever, and the apple shows elevations all round, just like the small mountains in Palestine.

Prof. Washburn: I have never seen the small mountains in Palestine, but that sounds like the plum curculio. Did you spray for the curculio?

Mr. Husser: I sprayed with arsenate of lead for all the troubles of the apple.

Prof. Washburn: That sounds like the plum curculio, but three sprayings, one before the buds open, once after the blossom is gone and once ten days later, three pounds of arsenate of lead for every fifty gallons bordeaux, I think will stop the growth you speak of.

Mr. Chapman: Will that be injurious to bees?

Prof. Washburn: No, you will escape the bloom.

Mr. Husser: When it is time to spray, and you see a rain coming on, would you spray in spite of the rain?

Prof. Washburn: No, I should not want to spray just before it rains. If I should spray in the morning, and a very heavy rain occurred in the afternoon, I should feel I ought to spray again the next day. If I sprayed on Wednesday, and it should rain on Saturday following I would not mind.

Mr. Husser: As we has a season this year (1909), it rained almost every day—how would you manage in that case?

Prof. Washburn: Well, you would have to spray between the drops.

Mr. O. W. Moore: If you have six hours sunshine after you spray, I think you will be all right.

Prof. Washburn: I will qualify somewhat what I said. Suppose you should spray on Wednesday, and you should have a warm day following with rain Thursday night, I don't think you should be worried at all. I think I told you that we had seen traces of arsenate of lead showing on the foliage three months after spraying, and that shows that as a general thing it sticks. If you should spray on

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Wednesday morning, and it should rain on Wednesday afternoon and there had been no sunlight, you should feel worried.

Mr. Husser: Can you tell what kind of weather there was during those three months?

Prof. Washburn: I could tell you by looking up the record, but I could not tell you off hand. We had considerable rain.

Mr. Husser: When the bordeaux is sprayed and shows the color, is not that safe from rain?

Prof. Washburn: I should think so, but I should like to have twenty-four hours' elapse.

Mr. Geo. J. Kellogg (Wis): The gentleman stated that we had three days' rain during the critical time, and we want something that does not require twenty-four hours to elapse without rain.

Prof. Washburn: This gentleman from Spring Valley has told us what his experience has been. He says that four or six hours of sunshine after spraying fixes it so there will be no trouble.

Mr. O. W. Moore: Yes, sir, that is true.

Mr. Harrison: Arsenate of lead is the best thing and takes the place of paris green.

Mr. Husser: If the orchard is used for a pig pasture would not the drippings from the trees where arsenate of lead is used be dangerous?

Prof. Washburn: It would not be if the dripping was not excessive, and, by the way, that brings up another question about the orchard in sod. I wish you would discuss that question sometime—it interests me—as to which is the best as regards keeping up the quality of the orchard, to cultivate it or leave it in sod. A bulletin has just come out at Geneva, New York, in which they claim the bearing is increased by cultivation, but in Minnesota it might be a good thing to leave it in sod.

Mr. Husser: The situation has lots to do with the orchard. If you have your orchard on a side-hill it is undoubtedly injurious to cultivate, if you could do so, as it would wash away the soil; it is impossible to hold the soil around the tree. It is all right to hoe around the tree three or four feet or as far out as the limbs extend.

Prof. Washburn: Here is a question: "What treatment would you advise where ants make their holes around an apple tree? They killed the tree in a year or two." Ordinarily the presence of the ant on the apple or plum tree means it is on the tree for the purpose of getting the honey dew from the plant lice. If you see ants going up and down a plum or apple tree you may know that they are after the plant lice, which secrete a sweet juice upon which the ant feeds. However, I have seen ants completely girdle a snowball and other bushes where ants were working around the bottom. That is evidently the black ant. You can easily kill that by using bi-sulphide of carbon, and it can be done so it will not affect the roots of the tree although the ant hill might be close to the tree. I would not kill the ants at all unless I were sure they were injuring the apple tree by gnawing the roots. If I made sure that they were I would make six or eight holes with a cane about ten inches deep in the ant hill, and

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in each hill I would pour a tablespoonful of bisulphide of carbon, which you can buy of the druggist. After you have poured in the liquid, shove the earth over the hole with your foot and lay on a couple of wet sacks. That will not affect the roots of the tree, but it will kill the ants; it is the gas which kills the ants. You have got to kill the queen that is laying the eggs. Ordinarily when you see ants on an apple tree they are not hurting the tree at all; they are simply there to take care of the plant lice, and it is the lice that injure the tree.

Mr. Martin: Would that hurt the chickens if they should scratch around the tree?

Prof. Washburn: Oh, no, that would not hurt them.

Mr. Martin: Would it not hurt them if they picked up the ants?

Prof. Washburn: No, it would do them no harm.

Mr. Martin: Do the ants eat the lice?

Prof. Washburn: No, they are there to get the juice that the lice secrete. They get a few drops of sweet juice from a louse, a juice of which the ants are very fond. You find ants on peony buds, but they are simply there to get that sweet varnish that is on the bud, of which they are very fond, and of which a layer lies on the bud to keep the rain off.

Mr. Husser: I read somewhere that ants are smart enough to start colonies of lice on trees in order that they may get the juice.

Prof. Washburn: There is one form of aphis, or plant louse, the corn plant louse, of which the ants take the eggs in the fall and carry them down in the soil, and in the spring they bring up the eggs and put them on the plant and give them food. I never heard of it being on trees. I never heard of ants using the apple tree for that purpose.

Mr. Husser: Will not kerosene drive them away?

Prof. Washburn: No, not effectively.

Mr. Jordan: I had a large ant hill close to the house and I punctured it full of holes and poured ten spoonfuls of kerosene into each hole, and we never had any more trouble with ants.

Prof. Washburn: You were very lucky; we tried that and did not succeed. I think as a rule the use of kerosene would not give a satisfactory result.

Mr. Husser: Salt drives them away, but it does not kill them.

Prof. Washburn: Some one seems to be too modest to ask a question in public: "What insect is it that bores the bark and eats the apple tree?" That is the flat-headed borer. If you are troubled with those borers the best thing to do is to remove them as far as possible with a knife, then wash the trunk of the tree with something they do not like, cover it with whitewash or crude carbolic acid the latter part of the summer, and that will keep them away. Whitewash and crude carbolic acid and paris green, or anything that is repulsive to them, put on the trunk of the tree will prevent them doing injury. When you spray with bordeaux mixture, that in itself acts as a repellant in a measure and keeps them away. Whitewash the trees with whitewash in which some carbolic acid and paris green has been placed, simply crude carbolic acid in ordinary whitewash, so that when the young borer hatches from the egg he is likely to be poisoned.

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Mr. Chapman: What do you find best to kill the green currant worm?

Prof. Washburn: The best thing to do is to use hellebore.

Mr. Chapman: Would not arsenate of lead be all right?

Prof. Washburn: That would be all right, but when you come to sell your currants you don't want a white coating on them.

Mr. Chapman: I use kerosene emulsion, and it kills them as dead as a salt mackerel.

Prof. Washburn: Yes, I have seen salt mackerel when they were pretty dead. Kerosene emulsion is a good thing, but it has got to be made with care and used with care. We have used it for years, and we find when it stands a little while a film will form on top and the oil will gradually separate. When you spray the last of the pailful it has a bad effect.

Mr. Chapman: I use it in a little pail and put in a teaspoonful in a sprayer full of water, and I keep it agitated all the time I am spraying.

Prof. Washburn: It is good stuff all right, but I should prefer a little hellebore. These worms get up on the inside of the bush, and you don't realize they are there, you don't know they are there until the bushes are stripped.

Mr. Geo. J. Kellogg (Wis.): One thought comes to me in regard to whitewashing for the borer. If the trunk of the tree is protected against sun scald there will be no trouble with the borer.

Prof. Washburn: Sun scald, as I understand it, appears on the west or southwest side of the tree, and it is apt to so affect the tree that it weakens it, and in that weak spot an attack is more easily made by insects. The borer will seek a weak spot, some crack, where it will deposit its eggs, and if you can prevent the rupture of the bark on your tree it will better resist the attacks of insects.

Mr. Kellogg: I understand they do not work in the shade?

Prof. Washburn: I would not want to make that as an absolute statement of the truth without some qualifications. I should not want to say that the borer does not work on the trunk in the shade.

Mr. Kellogg: The borer is also found in the top of the tree.

Col. C. W. Gurney (S. D.): I think the gentleman is right in regard to the borer working in the sunshine. It is not on account of the sunshine, but on account of the effect of the sunshine on the tree which has produced a condition which is tempting to the beetle which produces the egg. I do not believe the beetle will work in a tree that is absolutely sound, and unless there is sun scald the tree will be sound, but where there is sun scald there is a fermentation of the sap underneath the bark which makes a condition favorable for this beetle to deposit its egg.

Prof. Washburn: A human being that is weakly is more likely to be attacked by disease than one that is strong and sound.

The president is trying to get me off the platform. I think Mr. Latham ought to allow more time for this subject. I think we could spend one or two hours on this subject very profitably. I think you should tell Latham and Green we ought to have more time to discuss this subject.

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Mr. D. W. C. Ruff: A friend of mine set out four hundred apple trees near White Bear. Something attacked the trees that looked like little white buds. They sent a sample to the nursery, and the nurseryman thought it was due to hail. In a recent number of a horticultural paper they said it was probably the work of the buffalo tree hopper, but I never saw anything of that kind.

Prof. Washburn: If you will write to me I will send you a picture of the work of the buffalo tree hopper. I hope you people will sail into Green and Latham and insist that we have more time for this subject. The following question does not belong to the entomologist, but to the botanist: "Can you tell what causes the leaves of the white oak to shrivel in the fall as if scalded?"

The President: I take pleasure in introducing to you Prof. Freeman, who can probably answer the question.

Prof. E. M. Freeman: I had the pleasure of meeting some of you at the summer meeting last year. I was unfortunate enough to be away during the last winter meeting and was therefore unable to attend the meeting, and I am therefore especially pleased to have the opportunity to attend at this time.

As to this question in regard to the white oaks, it is pretty difficult to say from the shriveling of the leaves what the trouble is. It is equivalent to some one coming to the doctor, and saying, "What is the matter with me? I am sick." There are some fungous diseases that we call leaf spots that have attacked white oaks for the last two or three years that run along the veins, and the leaf gradually shrivels. It seems to attack individual trees where a tree is perhaps not touching any of its neighbors. This particular trouble is due to a fungous disease, known as leaf spot, and comes apparently only in wet weather. There is apt to be little trouble in the future from that. We may have sporadic attacks of the disease, but I believe remedial measures are possible. I do not believe it would be possible by spraying to take any measures against this disease. However, there may be other reasons why the oak leaves shrivel.

Judge L. R. Moyer: What would you do for orange rose leaf rust? It gets on the wild roses and rosa rugosa, and it is called phagmidia.

Prof. Freeman: I know nothing except cutting it out. Spraying with bordeaux would be theoretically unsafe, as we would not want to use bordeaux on rugosa, but I do not know of any series of attempts that have been made. Have you tried any sprays on it?

Judge Moyer: I have tried dust spray, with dust bordeaux.

Prof. Freeman: Any effect?

Judge Moyer: Seems to be a little better, but not much effect.

Prof. Freeman: The only recommendation I would want to make safely in regard to that rose rust is cutting it out. That will stop it. Here is a question: "What causes and what is the remedy for twig blight on apple trees, the Wealthy, and so forth?" In twig blight, or fire blight, the twigs blight as though they were scorched by fire. This is ordinarily a sign of bacterial disease, and is the same disease which attacks pear trees in the east and attacks pears in California.

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We have been looking into that twig blight this year, and we are doubtful whether it is the same as fire blight, but fire blight is a bacterial disease, and there is no remedy for it except pruning back carefully below the blighted portion, and after every few strokes of the knife it should be sterilized with corrosive sublimate. It is spread by insects; it seems to be spread by insects carrying it into the twigs. This method of dispersion is generally accepted. Spraying does no good, but cutting back and co-operation of a neighborhood in combating the disease is about the only effective remedy. The government has taken this matter in hand in California, and the only way they could accomplish anything was by sending a big corps of men out there to test this method of pruning, but it can only be done when they have the co-operation of the community.

Mr. Husser: Why does blight attack the Transcendent in preference to any other variety?

Prof. Freeman: That is as difficult to explain as it is why a disease attacks one human being in preference to another. Why the Transcendent is more susceptible to blight than any other variety I don't know.

Mr. Dewain Cook: Can you tell how to cure the brown rot on the plum and apple?

Prof. Freeman: I commonly say, "spray." We know that some men throughout the state have had considerable success in spraying early and often with bordeaux for brown rot. Some of you may have sprayed with bordeaux and not had success.

Mr. Cook: That is the case with me.

Prof. Freeman: I have records this year where considerable success was had with spray, but I believe in no case was it absolutely prevented. We hope in this coming year to carry on some extensive experiments in spraying for the prevention of brown rot.

Mr. Cook: I sprayed this last spring before the leaves came out on the plum trees and after the blossoms dropped, and again still later, but it had no effect upon that brown rot. The rot worked in the plums, and in some cases 95 per cent rotted where I sprayed, and it looked to me as though the injury came through spraying. The result was some blossoms turned yellow, and a good many hung on the trees.

Mr. Clarence Wedge: Have there been any observations taken of blight, or something resembling blight, on the bur oak? We had that form of blight quite commonly in our vicinity in southern Minnesota. Our large bur oaks are going out with disease that acts practically the same as fire blight in the apple.

Prof. Freeman: It is a twig blight?

Mr. Wedge: Yes, sir.

Prof. Freeman: It is not the same as referred to in that question regarding the drying up of the leaves of the white oak. That is only a drying up of the leaves. I know nothing about this twig blight on the oak. Have you sent in any specimens to our department?

Mr. Wedge: I have not done so. We have had it with us ten or fifteen years, and it seems to show first on the old oaks. I thought

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possibly it was a disease of old age and that only the old trees would be affected, but of late I have frequently seen it on younger oaks, bur oaks.

Prof. Freeman: I could not say positively without having samples of the twigs affected. I have observed this at the state park where the bur oak acted in a similar manner, the branches die off, the tree becomes misshapen and finally is killed. I have examined a number of them, and I found a disease known as "shoe-string" fungus at the bottom of the tree, Down near the base of the trunk if you will cut off the bark you will find small strings that look like flattened shoe strings, and this disease is due to the attack of a fungus that works from the roots and comes up to the trunk and apparently weakens the tree, which is caused by the fact that the terminal branches cannot get nutrition.

Mr. Husser: Have any experiments ever been carried on with the soil in an effort to overcome the blight in trees? I think cultivation of the soil and the use of proper plant foods in the soil, where the twigs of trees are subject to blight or other diseases, would be of benefit in preventing these diseases.

Prof. Freeman: You mean that by adding the proper food to the soil you could overcome the weakness of the trees so they would not be attacked by blight?

Mr. Husser: Yes, that's it, that is what I mean.

Prof. Freeman: I do not believe that experiments would bear you out in your opinion. In trying to get rid of blight, you had better not feed the soil.

Mr. Husser: We do not feed things with the right stuff. If meat does not agree with you, perhaps some other things will go better.

Mr. Sahler: Have you ever practiced anything like that? (Laughter.)

Mr. Husser: I have tried it sometimes.

The President: Prof. Freeman is the botanist and plant pathologist at the station at St. Anthony Park. He took his degree at Oxford and was employed in the Department of Agriculture at Washington. He is the author of "Minnesota Plant Diseases." It is a fine book of some 400 pages, and it is a book that is well worth your while to add to your library, and you can get the book by going for Prof. Freeman.

Prof. Freeman: I know Prof. Green wants me to cut it short. I want to say that we want to know the diseases most prevalent in the state. If you have any trouble I wish you would let us know about it. I do not want to promise to tell you all about it, but we will tell you what we can. There are lots of things yet to learn about these various diseases. This thing is still in its infancy, and it takes more time than we or anybody else is able to give it. We want to know the diseases prevalent in Minnesota so that we may direct our efforts against them. We have in mind the brown rot of plums, which you will agree with me is a serious disease in this state. In this connection I wish to say that if you will write to me at the station I shall be glad to send you all the literature we have on this subject, and we would also be glad to send you frank tags for sending back material. The United

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States government has inaugurated a movement for a plant disease survey in the United States, to find where diseases are prevalent and where they are not, and they have asked me to co-operate with them and have furnished me with the franking privilege, which means that you can send envelopes or tags in sending in material without cost to you. You have only to take a bunch of twigs, for instance, tie a string on, put on a tag and send it through the mail. In that way we shall be able to get a good deal of material which we otherwise would not get. Further, we want suggestions from you in this matter. We want your co-operation in our experiments and efforts, especially in the way of testing sprays and so on. Our work is divided in many ways. We have fruit diseases, we have diseases of garden plants and many other forms, and we have experiments under way now in line of preventing many of these various diseases. We hope the results of our work will benefit you, and we want your co-operation, and we want to get acquainted with you. (Applause.)

Grafting and Top-Working Apple and Plum Trees.

JOHN WICKLUND, WILLMAR.
(Kandiyohi Co. Hort. Society.)

Grafting is an art not thoroughly understood by the majority of those raising fruit on a small scale in this locality. And, being an amateur in the work myself, I feel that I cannot do justice to the subject.

The way I would go at it would differ some, in accordance as to what purpose the apple tree is top-worked for. If the purpose is to change a hardy tree that is unfruitful, or produces worthless fruit, into a fruitful tree, I would use the method called the cleft-grafting or wedge-grafting. The stock is the tree or root used to graft on, and the scion is the twig or limb to be inserted into the stock. To select branches on the stock about three-fourths of an inch in diameter is best. About two inches from the trunk or larger limbs cut square off with a fine saw. Split with a knife and small hammer (I use a horse shoe hammer) in center one and three-fourth inches deep. Prepare the scion with a sharp knife, in the shape of a wedge, thinner at the inside and leaving a bud on the outside near the base of the wedge part. The scion should have at least two buds, and if the buds are close together have three buds on each scion. The extreme length of the scion should not be over three inches. Next opening the cleft with a screw driver or chisel sufficiently to receive the scion without bruising it, insert it with the fingers—and the bud should be outward, taking care to have the inner bark of the scion and the stock to meet exactly. The screw driver is now withdrawn, and the cleft will hold the scion quite firmly. The whole wounded portion must

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now be covered with grafting wax. This kind of grafting need not be tied or wrapped.

The reason why I prefer cleft-grafting, as described above, is that all the smaller branches are cut away, and, hence, it will be easier to keep the tree from growing its original wood, when all limbs have been treated as stated. Stock more than one inch in diameter is not desirable as it will not make a good union.

For experimenting with new fruit or where one would not care to transform a tree from one kind of apple to another, also when propagation is desired from seedlings, I would recommend whip-grafting. Select a smooth place on the branches about the size of a lead pencil. Make a diagonal cut, one to one and a half inches long, according to the size of the stock and the scion. Next make a slit in this cut extending from the center downward one-half inch or more. Cut the scion so as to have about three buds. Then shape the lower end with a smooth sloping cut about the same length as on the stock. Cut a tongue upward so that it will fit in the downward slit of the stock. Now put the scion and stock together, interlocking the tongues and pressing them firmly together, making the inner bark of the stock and the scion to exactly fit, at least on one side. Now carefully wind the union with cotton or, better, woolen yarn to hold them firmly together. Cover the whole union with grafting wax, or in place of the yarn use waxed cloth strips, covering the union. Old calico or something easily torn will do.

(For cuts illustrating the above described processes see pages 118 to 122,, in Prof. S. B. Green's "Amateur Fruit Growing.")

Apple scions can be cut either in the fall or spring or in winter or any time when the tree is not frozen. They can be stored away in damp sand or dirt or dug down out-doors until wanted. The time for grafting apples is on warm days when the buds begin to swell.

Plums I would not recommend grafting on old trees. In most every orchard where plum trees are planted there is an abundance of shoots that can be used for stock grafting. Graft them where the stock stands, and when one or two years old transplant to where they are wanted. If the stock is from one-half to one inch think, I would graft close to the ground. If a smaller size is used for stock, whip-grafting is all right. There will form a bunch at the union, which spoils the appearance of the tree, I therefore prefer cleft-grafting close to the ground. Plums should be grafted earlier than apples—when the frost is out about one foot deep. Scions of the Compass cherry work equally well on plum stock.

In exchanging scions one can with little work start all the varieties to be found in a community both of apples and plums. I have some 150 plum trees of nine or ten varieties and have only bought two—and they were not true to name.

For grafting wax take four parts rosin, two parts beeswax, one part tallow or linseed oil, melt all together over a slow fire. When thoroughly mixed pour into a pail of cold water, then work with the hands until yellow. Make into balls, and it is ready to use and can be kept any length of time in a cold place.

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PROGRAM 44th ANNUAL MEETING

Minnesota State Horticultural Society,

Held in Minneapolis, Minn.

December 6, 7, 8, 9, 1910.

Place of Meeting.

The annual meeting is to occupy the same accommodations in the First Unitarian Church, corner Eighth St. and Mary Place, that have been used now so acceptably for a number of years, the society meeting in the audience room, the fruit exhibit being displayed in the large basement room immediately beneath, with a roomy cloak room situated immediately between the two.

Fruit Exhibit.

A good fruit exhibit is assured, and we hope about the usual proportion of the display will be seedling apples. Competition in seedling apples is open as heretofore to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. Be sure to bring something as a contribution to this fruit display. See list of premiums on last pages of this program.

Program.

Look at the program, and you will have some idea of what is in store for you. None we have ever issued has contained a greater diversity of topics, interspersed with unusual features of special interest.

QUESTION AND ANSWER EXERCISES.

To give opportunity for free discussion of topics of general interest to the members, a half-hour has been set aside just preceding the opening of each session of this meeting except the first. These exercises are led by experts in the various topics considered and give opportunity for the securing of information desired. It is suggested that members might send questions beforehand to the secretary. A question box will also be provided at the meeting that can be used for a similar purpose, or questions can be asked orally of the leader during the exercise. Come early and get the full benefit!

Extend Invitation.

Don't forget to invite your friends to this meeting. Neither forget the wife, who will enjoy an outing and meeting of this kind as well or better than you—nor the son or daughter, who is to follow you in this cherished work.

HOTEL VENDOME IS SOCIETY HEADQUARTERS.

This four-story hotel, well-known to many of our members, is conveniently located one-half block from the office of the society, at No. 19 South Fourth St., midway between Nicollet and Hennepin avenues. There is a cafe in the building, and a number of other good restaurants and hotels adjoin. Rates to members are $1.00 per room, one in a room, or seventy-five cents per day each for two in a room. Rooms with bath, for one $1.50, for two in the room $1.25 each. Every room is provided with hot and cold water, electric lights, Tri-State telephone, etc.

A large room will be provided as headquarters of the society, to be used by the members for social purposes. The location of this room can be learned from the clerk at the hotel.

It would be well for members to address the hotel directly and make reservation of rooms as long a time beforehand as possible, to make sure of accommodations—always stating when you will arrive and depart.

DEMONSTRATIONS AND INSTRUCTION IN GRAFTING AND CROSS-POLLINATION, PACKING OF APPLES AND SPRAYING.

Each day of the annual meeting, from 1:00 to 2:00 o'clock p. m., the arts of grafting, packing of apples, cross-pollination and spraying will be taught as regular class exercises in the fruit room, and members can avail themselves of these opportunities to become proficient in these various arts. The demonstration in grafting will be led by Mr. Dorney Valleau, that in cross-pollination by Mr. Arne Aamodt, the packing of fruit by Prof. A. R. Kohler, and spraying by Prof. A. G. Ruggles—all of these demonstrators being connected with the State Experiment Station at St. Anthony Park. Look for the signs in the fruit room directing to these various exercises.

Discussion following each topic.

Except as noted no persons are selected to open the discussion which may follow the presentation of each topic. Discussions "free for all," whether members or not. Ask questions or express opinions freely.

For further information address the officers of the society. See last page of this program.

THOS E. CASHMAN, Pres.,
Owatonna.

A. W. LATHAM, Secy.,
207 Kasota Block,
Minneapolis, Minn.

NOTICE:—A bell will be rung in the Fruit Room five minutes before the exercises begin in the Audience Room.

A TEN MINUTE LIMIT ON ALL PAPERS.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to ten minutes, or 1,000 words, except as noted.

TUESDAY MORNING SESSION.

9:30 o'clock.

Every member attending should not fail to be in his seat promptly when this session opens.

Organ Solo, ending at 9:30 o'clock.
Invocation....Rev. C. S. Harrison, York, Neb.
Song.....Mr. Trafford N. Jayne, Minneapolis
President's Annual Greeting.....
.....Thos. E. Cashman, Owatonna

1. The Mission of Beauty.
   C. S. Harrison, Nurseryman, York, Neb.
2. Strawberries for Every Garden—Five Bushels to the Square Rod.
   G. J. Kellogg, Nurseryman, Lake Mills, Wis.
3. Combating Frost and Drouth.
   Langford W. Smith, St. Paul.
4. Irrigation with Lake Muck.
   C. R. Sandvig, Belgrade.
5. Growing Seedlings and Bringing Them to Fruitage.
   Wyman Elliot, Minneapolis.
6. Developing an Orchard.
   Harold Simmons, Fruit Grower, Howard Lake.

Appointment of committees on credentials and award of premiums.

N. B.—Speak of Demonstrations in Fruit Room.

Announce exercise at 1:30 p. m.

This session will close promptly at 11:30 o'clock.

All annual memberships expire on the first day of the annual meeting. Renew or become a member by paying the Secretary $1.00.

TUESDAY AFTERNOON SESSION.

1:30 o'clock.

Discussions open to everybody.

The Question and Answer Exercise to occupy this half-hour will be on the **"Vegetable Garden,"** and led by one of our most successful gardeners, Mr. F. H. Gibbs, of St. Anthony Park.

2:00 o'clock.

President Cashman in the Chair.

Reception of Delegates.

Program.

Nursery Topics.

1. Digging and Packing Nursery Stock.
   W. H. Eddy, Nurseryman, Howard Lake.
2. Making the Root Graft.
   L. Z. Smith, Nurseryman, Mankato.
3. Root-Gall.
   E. A. Smith, Vice-Pres. Jewell Nursery Co., Lake City.
4. Value to the Public of Nursery and Orchard Inspection.
   Prof. F. L. Washburn, Pres. Am. Assn. Hort. Inspectors.

Discussion led by Dr. E. M. Freeman and Prof. J. G. Sanders, Wisconsin Nursery Inspector.

"Fruit Growing in Central South Dakota," C. M. Yegge, Alpena, S. D., Delegate S. D. State Hort. Society.

The Society Fruit List.

J. A. Howard, Orchardist, Hammond.

3:30 o'clock.

Minneapolis Market Gardeners' Association.

N. H. Reeves, President, in the Chair.

1. The Cabbage Field.
   Nic Lebens, Bradley Sta., St. Paul.
2. Watermelons on the Farm.
   R. A. Schutz, Inst. Lecturer, Le Roy.
3. Growing, Storing and Marketing the Onion.
   Chas. Rixon, St. Louis Park.
4. Melons for Market.
   P. E. Dorn, Brooklyn Center.
5. Ginseng Growing as a Pursuit.
   A Brackett, Excelsior.

4:30 o'clock.

President Cashman in the Chair.

A Lantern Talk on "Butterflies."

Illustrated with many beautiful colored slides. Miss Florence E. Lillie, St. Anthony Park.

Are you a member of the Plant Breeders' Auxiliary? If you are growing seedlings and are a member of the Horticultural Society you should join at once. No expense. Consult the secretary.

WEDNESDAY FORENOON SESSION.

9:00 o'clock.

Discuss each topic freely.

A half hour question and answer exercise on **"Top Grafting the Orchard,"** led by that veteran in this work, A. J. Philips, West Salem, Wis.

9:30 o'clock.

President Cashman in the Chair.

Prize paper on Horticultural Topic by student in Minnesota Farm School awarded first premium from "Gideon Memorial Fund."

A Camping Trip in the Dakotas.
Clarence Wedge, Nurseryman, Albert Lea.

The Orchard.

1. Orchard Protection.
   S. H. Drum, Waseca.
2. Orcharding at Morris.
   D. T. Wheaton, Morris.
3. Fighting Frost in the Orchard.
   F. P. Spencer, Delegate, Iowa State Horticultural Society, Randolph, Iowa.
4. Farmers' Orchard vs. Commercial Orchard.
   A. J. Philips, Veteran Horticulturist, West Salem, Wis.
5. How We Have Guarded Our Trees from Frost.
   A. A. De Smidt, Battle Lake.
6. Pruning the Orchard for Fruit.
   Emil Sahler, Waseca.

11:15 o'clock.

Minnesota State Rose Society.

Mrs. H. A. Boardman, President, in the Chair.

1. The Japanese Water Garden.
   F. F. Fletcher, Minneapolis.
2. The Iris, Both Native and Foreign.
   W. E. Fryer, Nurseryman, Mantorville.
3. The Care of Cut Flowers.
   O. J. Olson, Florist, St. Paul.
4. Melon Growing.
   Mrs. H. B. Tillotson, Minneapolis.

You can become a life member of the State Horticultural Society by payment of $10.00, in two annual payments of $5.00 each if you prefer. This will entitle you to a file of our bound reports, a library in itself.

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

A half hour "Question and Answer Exercise" on **"Beautifying Home Grounds,"** led by F. H. Nutter, Minneapolis, a practical landscape architect of long experience. Ask him questions.

2:00 o'clock.

President Cashman in the Chair.

1. Apple Sorting and Packing Demonstration, an object lesson conducted by Prof. A. R. Kohler, Assistant Horticulturist, St. Anthony Park.
2. Cause and Effect of Curly Leaf in the Raspberry.
   D. V. Plants, Long Lake.
3. Controlling Diseases of Fruit Plants.
   Prof. E. M. Freeman, St. Anthony Park.
4. The Present and Future of Plum Growing in the Northwest.
   Dewain Cook, Horticulturist, Windom.
5. The Work of the State Extension Horticulturist.
   K. A. Kirkpatrick, Horticulturist, Extension Division, St. Anthony Park.

3:15 o'clock.

Woman's Auxiliary.

Miss Emma V. White, President, in the Chair.

1. The Boy and the Garden.
   J. L. Boughner, City Editor, Minneapolis Tribune.
2. An Easter Lily.
   Mrs. Sallie M. Moses, Asst. Editor N. W. Agriculturist, Minneapolis.
3. The Sixth Year in Civic Improvement.
   Mrs. A. B. Underwood, Lake City.
4. The Value of Club Work to Women in the Rural Districts.
   Mrs. E. M. La Penotiere, Minneapolis.

4:30 o'clock.

An illustrated address by Prof. N. E. Hansen, of Brookings, S. D., the noted horticultural explorer, **"Horticulture around the World,"** with over 75 slides showing prominent features of his latest "world round tour."

Are you taking part in the apple seedling contest? See Page 16.

THURSDAY FORENOON SESSION.

9:00 o'clock.

A thirty-minute "Question and Answer" exercise on "The Berry Field," led by a successful grower of long experience, Frank I. Harris, of La Crescent.

9:30 o'clock.

President Cashman in the Chair.

1. Report of Committee on Fruit List.
   J. P. Andrews, G. W. Strand, T. E. Cashman.
2. Adoption of Fruit List.

ANNUAL REPORTS.

Report of Executive Board, Wyman Elliot.
Report of Secretary, A. W. Latham.
Report of Treasurer, Geo. W. Strand.

The annual reports here following will be filed for publication without reading, but each officer will be allotted two minutes when presenting his report in which to make oral statement as to features of special interest in connection with the substance of his report.

Reports of Vice-Presidents.

First Cong. Dist., W. A. Yahnke, Winona; Second, H. J. Ludlow, Worthington; Third, H J. Baldwin, Northfield; Fourth, D. W. C. Ruff, St. Paul; Fifth, E. F. Pabody, Minneapolis; Sixth, Aug. Loegering, Long Prairie; Seventh, M. Soholt, Madison; Eighth, A. W. Patten, Mora; Ninth, H. L. Melgaard, Argyle.

Reports of Superintendents of Trial Stations.

Prof. LeRoy Cady, State Experiment Station; Thos. E. Cashman, Owatonna; Dewain Cook, Windom; A. B. Lyman, Excelsior; F. I. Harris, La Crescent; L. R. Moyer, Montevideo; Mrs. Jennie Stager, Sauk Rapids; F. J. Cowles, West Concord; A. B. Hostetter, Duluth; A. H. Reed, Glencoe; Rev. John B. Katzner, Collegeville; Seth H. Kenney, Waterville; Frank Brown, Paynesville; M. Soholt, Madison; Jas. Arrowood, Nevis.

Reports of Auxiliary Societies, viz.:

Minnesota State Bee-Keepers' Society, Minnesota Rose Society, Woman's Auxiliary, Southern Minnesota Horticultural Society, North Dakota Horticultural Society, Kandiyohi County Horticultural Society, Red River Valley Horticultural Society, Minnesota State Forestry Association, Lac qui Parle County Horticultural Society, Northeastern Minnesota Horticultural Society.

THURSDAY AFTERNOON SESSION.

1:30 o'clock.

Don't Overlook the Discussions.

"Marketing by Association" will be the subject of the half hour "Question and Answer Exercise," led by R. A. Wright, Excelsior, for many years officer in such an association that is prosperous.

2:00 o'clock.

President Cashman in the Chair.

Memorial Hour.

Song .....Trafford N. Jayne
Addresses by Rev. C. S. Harrison and others.

3:00 o'clock.

Annual Election of Officers.

To be enlivened by distribution of premium apples to those in the audience who will save the seed for the growing of apple seedlings for the prize contest.

3:45 o'clock.

Minnesota State Forestry Association.

President J. E. Rhodes in the Chair.

1. The Forests of Costa Rica.
   C. L. Hamilton, Minnesota College of Forestry, '11.
2. The Forest Fires in the West.
   R. D. Anneberg, Minnesota College of Forestry, '13.
3. Eucalyptus Growing in California.
   C. W. Bowen, Minnesota College of Forestry, '11.
4. Proposed Forest Legislation.
   A discussion led by delegates from "The Lake States Forest Fire Conference."
5. The Conservation of Moisture in Forest and Field.
   Col. Freeman Thorpe, Hubert, Minn.

To be followed by a lantern slide talk illustrating forestry conditions and development in Minnesota, by Prof. J. P. Wentling of the Minnesota College of Forestry.

At 6:00 o'clock we go in a body to the banqueting hall to dine together in the usual way.

FRIDAY FORENOON SESSION.

All Discussions Open to Every One.

9:00 o'clock.

A thirty-minute "Question and Answer Exercise" on the general subject of **"Work in the Nursery,"** to be led by D. M. Mitchell, Nurseryman, of Owatonna.

9:30 o'clock.

President in the Chair.

Combating Drouth.

1. My Experience with an Irrigating Plant.
   F. H. Ellison, Minneapolis.
2. The Dust Mulch in Relation to Drouth.
   O. B. Westley, Cooperstown, N. D.
3. Peat as a Mulch and Fertilizer.
   C. S. Ketchum, Brook Park.
4. An Object Lesson in Dust Mulch.
   A. Brackett, Excelsior.
5. Impromptu Irrigation.
   H. G. Groat, Fruit Grower, Anoka.
6. Well Irrigation.
   Dr. D. J. Kenney, Minneapolis.

10:45 o'clock.

Plant Breeders' Auxiliary.

(Wear the Button.)

J. M. Underwood, President, in the Chair.

1. The Plant Breeders' Auxiliary in 1910.
   Clarence Wedge, Secy., Albert Lea.
2. The State Fruit-Breeding Farm for 1910.
   Chas. Haralson, Supt., Excelsior.
3. Report of Committee on Examination of the Minnesota State Fruit-Breeding Farm.
   David F. Simpson, Minneapolis, E. W. Randall, St. Anthony Park, Committee.
4. Some Results of Plant Breeding to Date.
   Prof. N. E. Hanson.
5. Breeding Everbearing Strawberries.
   Chas. F. Gardner.

Are there any good seedling apples, etc., in your neighborhood? Get them and the owner of the trees to the annual meeting. Do your neighbors a favor by urging them to attend.

FRIDAY AFTERNOON SESSION.

1:30 o'clock.

The "Question and Answer" half hour will be occupied by this subject: **"Apple Culture,"** led by a practical apple grower and nurseryman, Jno. P. Andrews, Faribault.

2:00 o'clock.

President in the Chair.

Spraying.

1. Spraying in the Jewell Orchards.
   H. U. Beebe, Jewell Nursery Co., Lake City.
2. When and How to Spray.
   S. H. Kenney, Supt. Trial Station, Waterville.
3. Spraying the Home Orchard.
   C. H. Andrews, Andrews Nursery Co., Faribault.
4. My Spraying Experience.
   E. G. E. Reel, Fruit Grower, Excelsior.
5. Spraying Equipment and Spraying Compounds.
   Prof. A. G. Ruggles, Asst. Entomologist, St. Anthony Park.

Top-Working.

6. Top-Working Apples on Hardy Stocks.
   Chas. Bubak, Olivia.
7. Top-Working and Congeniality of Stock and Graft.
   W. K. Bates, Nurseryman, Stockton.

3:30 o'clock.

Closing exercises.
Two-minute speeches by members.
Closing song by Trafford N. Jayne, Minneapolis.

4:00 o'clock.

Closing remarks by the President.
Adjournment.

CHINKING.

The following subjects will be called up at any point in the program where opportunity offers. Experience shows that there will be such openings, when we may expect to hear from these friends. But to be sure of getting this you must be on hand both early and late.

1. Producing Pacific Coast Crops of Apples in Minnesota.
   O. F. Brand, Nurseryman, Faribault.
2. An Appeal to Fruit Growers.
   R. M. Probstfeld, Moorhead.
3. The Farmers' Orchard.
   M. Oleson, Montevideo.
4. Strawberries.
   Albert Czanskowski, Delano.
5. My New Blackberry and Other Matters of Horticultural Interest.
   Martin Penning, New Ulm.
6. Gardening in a Dry Season.
   Dr. H. M. Speechly, Delegate Western Horticultural Society, Pilot Mound, Manitoba.
7. Closer Relations in Our Rural Districts.
   W. W. P. McConnell, Institute Worker, Mankato.
8. Top-Working.
   W. S. Higbie, Nurseryman, Eden Prairie.

PREMIUM LIST, ANNUAL MEETING, 1910.

Thos. Redpath, Supt. Fruit Room.

Frank I. Harris, Assistant.

Geo. W. Strand, Entry Clerk

All entries must be made with the Secretary at least one week before the date of the annual meeting, and blanks may be secured of the Secretary for this purpose.

All exhibits must be in place by 11 o'clock A. M. of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

Grapes.

Each variety shown....	.75	.50	.25	...

APPLES (not including crabs).

Each variety (may or may not have been in cold storage) included in the 1910 fruit list of the society, or in the 1910 premium list of the Minnesota State Fair	.50	.40	.30	...
Collection, not to exceed ten nor less than six varieties	.....$20.00, to be divided pro rata.			

PREMIUM LIST—Continued.

Pecks of Apples.

Peck of any variety of apples, the fruit exhibited to be at the disposal of the society. An exhibitor may enter a peck each of as many different kinds as he pleases. $15.00 to be divided pro rata.

SEEDLING APPLES.

Five specimens (not less than 2¼ inches in diameter) must be furnished of each variety exhibited.

Entries of seedling apples can be made only by owner of the original tree or his sole authorized agent. Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Before payment of premiums awarded on seedling apples, a history and description of the tree and its fruit may be required.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage.

Premium $40.00, to be divided pro rata.

LATE WINTER SEEDLING—Same conditions as for early winter seedlings except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter.

Premium $60.00, to be divided pro rata.

In each of the above two classes the varieties receiving the three highest awards will be designated as having received the first, second and third premium respectively.

BUSHEL BOXES OF APPLES.

Only one variety can be shown in a box. Bushel boxes of standard size must be used. Awards will be based on the quality of the fruit, packing, etc.

Bushel Box of any variety of apples, including seedlings.

$25.00, to be divided pro rata.

☞Members are urged to bring in for exhibition any home-made devices or contrivances which save labor or add to the convenience of work in the garden or orchard.

A special prize of **FIVE DOLLARS** is offered by Mr. Wyman Elliot for cleverest one exhibited.

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SECRETARY'S CORNER

DELEGATES FROM LOCAL SOCIETIES.—Notice of appointment of two of these has been received as follows: C. E. Roe, Duluth, Minn., representing the Northeastern Horticultural Society, and Robert C. Wedge, Albert Lea, representing the Southern Minnesota Society.

DELEGATES FROM MANITOBA.—We are to have the great pleasure of having with us again from the Western Horticultural Society, with headquarters at Winnipeg, Dr. H. M. Speechly, who was the delegate from that society at our annual meeting two years ago. Dr. Speechly represents the optimistic side of horticulture in the Northwest provinces, and we rejoice in having so hopeful a neighbor. We shall hear from him at some time during the meeting and profit by his experience.

FIRST AWARD UNDER THE GIDEON MEMORIAL FUND.—A number of students in the horticultural classes at the State Agricultural School are competing this year for the $25 annual interest money devoted to this purpose from the Gideon Memorial Fund. It was at first proposed to have a number or these papers read at the annual meeting, but on account of the fullness of the program the later decision is to read only that one which secures the first prize. It will be on some practical horticultural subject, and should be well worth listening to.

"WISCONSIN HORTICULTURE."—The enterprising young secretary of the Wisconsin Society, Frederic Cranefield, is getting up a very interesting monthly of sixteen pages, which is the official organ of the society, and is sent out to the membership. In the last number we note that he is handling some of the nursery sharks that are operating in Wisconsin with his coat off, and I have no doubt they deserve it. Annual membership at present in the Wisconsin Society is fifty cents per annum, but we understand they are talking of raising the fee to $1. Minnesota cordially endorses this venture of a sister society.

THE CONTINUED DROUTH A MENACE. — Note was made in the last number of our monthly of the danger of root-killing, if the winter sets in with the ground still dry. Up to the time of writing this there has been no general rainfall to correct the threatening conditions, and the orchardists especially should look to it that the roots of their trees are in some way protected, or there is great danger of serious disaster. Perhaps an early snowfall may give us all the protection needed or desired. It is cheaper to care for the orchard you have than to grow another, say nothing of the discouragement of such losses. Don't take too many chances!

DAMAGES FOR FIRE TRESPASS.—In a recent case brought by the United States against the Missouri Railroad Company, Missouri, damages were awarded to the government, not only for the loss of merchantable timber but also for the destruction of unmerchantable young growth. This decision, we understand, is new in that it allows damages for young growth, and by so doing establishes a very important precedent. If this decision is followed up by later ones, it will give additional reason for more care on the part of the railroads and others who cause forest fires, that have this year done such an enormous amount of damage throughout the country.

A HOME TALENT PROGRAM.—In studying the program of the annual meeting it will be noted that it is almost strictly home talent, at least it does not go outside of the confines of the state or its immediate vicinity, and those who are to take part are as a class simply reciting their experience along the various lines that are to be taken up at the meeting, and the discussions that should follow the reading of these articles will be largely of a similar character. So that the result of this gathering should be a symposium on a large scale of home experiences in the devel-

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opment of fruits, trees and flowers in the Northwest. Great good should come from this practical kind of meeting, in which each one attending may feel entirely at home and not hesitate to take a part.

DELEGATES TO ANNUAL MEETING.—Delegates from adjoining state horticultural societies to our annual meeting have now been generally appointed, and notification of such appointments have reached this office. W. I. Lawrence, of Sturgeon Bay, Wis., will represent the Wisconsin State Horticultural Society; Mr. C. M. Yegge, one of the pioneer orchardists of that state, residing at Alpe, a, is to be the representative of the South Dakota Society. Prof. Hansen speaks of him as seventy-five years young. Col. W. A. Burnap, of Clear Lake, Ia., is to represent the Northeast Iowa Society. The Col. has been with us before, and we are more than glad to welcome him again. A note received from him at a hospital in the northern part of the state speaks of his illness but probable recovery in time to attend the meeting. Mr. F. P. Spencer, of Randolph, Ia., is to represent the Iowa State Society. Some, if not all, of these delegates will be represented on the program, presenting topics of special interest to Minnesota members.

WE NEED MORE ANNUAL REPORTS—The state legislature two years ago made an appropriation to increase the issue of the annual reports 500 annually, but this appropriation runs only for two years, so that it will be necessary to ask the legislature to renew this appropriation. We should not, however, be satisfied with this, as the society really needs a larger issue. In fact, there are not as many reports printed as there are members in the society, and except that some members were willing to do without the report there would be serious difficulty in the matter. We should have enough reports so that one could be sent promptly to each member when the membership fee was received and not later on when it is learned whether the member is willing to do without the volume or not. The book is of such value for reference that each member should certainly have it on hand for that purpose.

WILL YOU BE AT THE ANNUAL MEETING.—The program of this meeting is already in your hands when this number of the monthly reaches you. Have you looked it over carefully and noted the opportunities for instruction and entertainment which it presents? In what better way can you take a winter vacation than to spend the week of the meeting in Minneapolis? With the exception of Thursday evening, when the annual banquet is held—which no member attending the meeting should miss—there are no sessions held in the evening, and each day's session closes, except the last day, with an interesting entertainment with the stereoptican. There should be from our large membership at least 500 in attendance at this meeting. Come and enjoy the rare occasion with us and learn some of the things which it would be an advantage for you to know, and contribute your part to making this the best meeting the society has ever held.

A VISIT TO THE FRUIT-BREEDING FARM.—A few days since Mr. Wyman Elliot and the writer made a short visit to the State Fruit-Breeding Farm, at Zumbra Heights, a few miles west of Excelsior, in the Minnetonka region. We found many things of interest, it being just at the close of the season when preparations were being made for the storage of fruit trees of various sorts in the storage cellar preparatory for use in the greenhouses later in the winter. A large number of trees of various fruits adapted or possibly adapted to this climate were being cared for for this use. Late in the winter when in blossom there will be crosses made between hardy varieties of perhaps inferior quality and tenderer varieties of high quality. A similar work was done last year, and some 3000 seeds secured therefrom to be planted the coming spring. We found thousands of grape seedlings, apple seedlings, plum seedlings, strawberries, etc. in infinite variety. With the exception of strawberries and grapes none of these have as yet fruited, but there is prospect of a considerable fruitage next year should the season prove favorable. Those attending the annual meeting will hear a very full report of the station from the superintendent, and also from Judge David F. Simpson and Mr. E. W. Randall, a committee who reviewed the farm recently for this purpose.

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ANNUAL MEETING

Minnesota State Horticultural Society,

DECEMBER 7-10, 1909.

TUESDAY MORNING SESSION.

Prof. Samuel B. Green, president, opened the forty-third annual meeting of the Minnesota State Horticultural Society at 9:30 o'clock, in the First Unitarian Church, Minneapolis, on the 7th day of December, 1909.

The invocation was made by Rev. C. S. Harrison, of York, Nebraska, which was followed with a song by Mr. Trafford Jayne, of Minneapolis.

The president made a brief "greeting," after which the regular order of the program was followed. (See index.)

The President: We will now take up the regular program, and I will ask for a paper on strawberries by Mr. Chapman, who takes up the subject of horticulture in one of our institute corps.

Mr. N. E. Chapman, of Owatonna, then read a paper on the subject of "Strawberries for All." (See index.)

Discussion.

The President: We are very glad to have Mr. Hanchett, of Wisconsin, with us again this year, and this morning he will read a paper giving his experience of twenty-five years in the raspberry field.

"The Lessons of Twenty-five Years in the Raspberry Field" were set forth by Mr. W. H. Hanchett, of Sparta, Wisconsin. (See index.)

Discussion.

The President: Well, I think we have given this subject about all the time we can give it, and as Mr. Bush, who is next on the program, is not here, we will take up a paper by Mr. Husser, who will speak of nut culture in Minnesota.

Mr. Henry Husser, of Minneiska, then read a paper on the subject of "Nut Culture in Minnesota." (See index.)

Discussion.

The President: I am now going to call for the next number on the program, which is number five, and I know the author of this so well that you may expect to hear anything, from the affairs in the house, on the farm or in the garden. We are always glad to have him with us because he has grown up with us; he is a Wisconsin product, but we have brought him up and made a man of him (laughter), and it gives me pleasure to introduce to you Mr. A. J. Philips. He will tell us about his garden.

Mr. A. J. Philips, of West Salem, Wisconsin, then talked about everything, although his subject was "My Garden." (See index.)

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The president then appointed the following committees:

Credentials—W. S. Higbie, Eden Prairie; A. B. Franklin, Minneapolis; G. A. Anderson, Renville.

Awards on Single Plates—J. P. Andrews, Faribault.

Collections of Apples and Top-worked Apples—A. R. Kohler, St. Anthony Park.

Grapes—Gust Johnson, Excelsior.

Pecks of Apples—Geo. W. Strand, Taylors Falls.

Bushel Boxes of Apples—Dewain Cook, Jeffers.

Seedling Apples—Clarence Wedge, Albert Lea; Wyman Elliot, Minneapolis.

Nuts—John R. Cummins, Minneapolis.

The President: We have considerable time left before the noon adjournment, which we can use in any way specially desirable. We have a number of matters here that can be presented now, although I purposely tried to conclude the morning's program before the students went away. I see Mr. Terry, of Slayton, here, and I am going to call on him to talk to us about the effect of snow on trees. I am glad to see Mr. Terry with us; he has not been here for several years.

"The Effects of Deep Snow on Trees" was then explained in a paper presented by Mr. Alfred Terry, of Slayton. (See index.)

Discussion.

TUESDAY AFTERNOON SESSION.

The preliminary session was called to order by Prof. Green, and the subject of "The Plant Breeder's Problems" was announced to constitute the "Question and Answer Exercise."

The President: We have Prof. Hansen with us to give us a talk on hybrids, and at 2 o'clock he will talk to us about what he found in Russia. I know we will be delighted to hear from him. (Applause.)

A general discussion on the subject of "The Plant Breeders' Problems" was then led by Prof. N. E. Hansen, of Brookings, S. D. (See index.)

The President: We will now take up the regular program of the afternoon, and we will again hear from Prof. Hansen, who will tell us what he found on his last trip to Russia.

Prof. N. E. Hansen, of Brookings, S. D., then addressed the society on the subject of "What I Found in Russia in 1908." (See index.)

The President: I know we have all greatly enjoyed this talk by Prof. Hansen; and I hope the possibilities he sees before him he may live to see realized and see them become of great benefit to humanity.

The next number on the program is a digression from our line of work, and this is what we know as an industrial contest. We have never had it before, but it is so important a matter that it has seemed especially desirable to bring it before this meeting. The in-

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terests of children and the interests of farm and horticultural life and other things rural make up the life of the rural community. Mr. Wilson, who is superintendent of the Farmers' Institute, is going to talk to us about that work, describing the movement and its accomplishments and what he sees for it in the future.

"Fruit and the Children in the Industrial Contest" was the subject of an address made by Mr. A. D. Wilson, Supt. Farmers' Institute, St. Anthony Park. (See index.)

PLANT BREEDERS' AUXILIARY.

President S. B. Green: The next on the program is the meeting of the Plant Breeders' Auxiliary, and since Mr. Underwood, the president, is not here, I have been requested to preside at the meeting. The object is to interest members of the State Horticultural Society and others in the breeding of plants and in the development of new varieties of fruit especially, all along the line. This work has been undertaken in such a practical way that a large number of people have become much interested and have shown how they can of themselves make this work helpful to themselves, and they take pleasure in improving upon nature—and not only that, but they have the pleasure of originating these new features and varieties in plant life. There are a great many people at work breeding plants. It is my impression that there are something like twenty odd thousand seedlings on trial in different parts of the state, and the possibilities in that work are tremendous. The State Fruit-Breeding Farm is well equipped and is doing good work.

This work of the state is supplemented by the work of individuals throughout the state, so that we have a large number of people at work improving upon nature in producing these seedling plants, which will undoubtedly yield great results in the future. President Underwood is not here for some reason, and I have been asked to keep the chair. I am going to follow the program as stated here and will first call for the report by the secretary, Mr. Clarence Wedge, who has done an enormous amount of work and takes a great interest in this auxiliary.

Mr. Clarence Wedge, Secretary, of Albert Lea, then submitted a report of "The Plant Breeders' Auxiliary in 1909." (See index.)

Discussion.

The President: The next number on our program is number two, the report of the State Fruit-Breeding Farm, by Mr. Haralson, the superintendent. (Applause.)

Mr. Charles Haralson, the superintendent, of Excelsior, then submitted the report of "The State Fruit-Breeding Farm for 1909." (See index.)

The President: You will understand that the legislature in 1905 provided for a Fruit-Breeding Farm, the idea being to put this work on a basis commensurate with its importance. In that bill there was a proviso that a committee of the Horticultural Society

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should visit that farm each year and make a report to the Horticultural Society and to the board of regents of the state university, and this year the committee appointed by the executive board for this purpose consisted of Mr. F. H. Boardman and Rev. E. F. Pabody, of Excelsior. I am now going to call on Mr. Boardman for this report.

Mr. F. H. Boardman: Prof. Green has explained why this report is made and why the state demands an annual report. I will read the report as made by Mr. Pabody and myself, which will put it into a more concise form than if I should attempt to make an oral statement.

The "Report of Committee on Examination of the Minnesota State Fruit-Breeding Farm" was then submitted by Mr. F. H. Boardman, of Minneapolis, on behalf of the committee. (See index.)

The President: The next number on our program deals with the pollination of orchard fruits. Mr. Cady is to make a report in regard to some recent literature that has come out in the form of bulletins.

Mr. Le Roy Cady, Assistant Professor of Horticulture, St. Anthony Park, then read a paper on "Pollination of Orchard Fruits." (See index.)

RECEPTION OF DELEGATES.

The President: I am now going to call for a few words from the delegates who are present from sister states. If any of the delegates have not yet handed in their credentials, or have been overlooked in any way, we would like to have them mention it. I am first going to ask Mr. A. W. Krueger, of South Dakota, to say a few words. Mr. Krueger represents the South Dakota Society and comes from Groton. We would like to get acquainted with you, Mr. Krueger, and on behalf of the society I am pleased to greet you. (Applause.)

Mr. A. W. Krueger (S. D.): I just came in this afternoon and this request comes to me rather suddenly, as the old maid said when the man proposed to her. I used to be a former Minnesotan, and it is somewhat like coming home to come to these meetings. I am pleased to come here because it is such an instructive meeting, it is such a good school. I heard a gentleman stating what those contests had done for the schools in counties all over this state, and I thought what a grand idea it was. Why should they confine that to the counties? Why not also bring it to the state fair and see what interest they would take if the counties would compete. When I think of these great improvements we are making in fruit I think that the man who can produce two blades of grass or two plums or apples where but one grew before is indeed a great man and a benefactor. He is one of the greatest men that humanity could have, and for that reason I am glad that this work is going on. I heard a man by the name of Cummings, at the Billings fair, say that Germany supports

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today 65,000,000 population and does it better than it did twenty years ago when the population was only one-half or two-thirds as much. What is the reason? What is the cause of it? Nothing but a study of this scientific farming. I had the pleasure of visiting the Omaha exposition held recently, where they demonstrated what they had done in the way of corn growing, where they had done away with the old method, and some of them by thorough testing of the fertility, using that which showed the strongest fertility, had improved their corn not only in quality but in quantity, and that as much as fifteen per cent. I went home all the way thinking. I thought, here I have been raising grain for twenty-five years, wheat, oats and some barley, but mostly wheat, and I was thinking why not try those improved methods, and I am going to put them into practice. I say those men are great, and I say we should go into this line of work, and I think while we cannot create a new Minnesota, a new state of Iowa or a new state of South Dakota, we can improve our grains and fruits in such a manner that the production will be doubled, and while it will not be creating a new state it will be building up a better state. (Applause.)

The President: Rev. C. S. Harrison is a delegate from the York, Nebraska, society, and we went a few words from him.

Rev. C. S. Harrison (Neb.): I feel I am growing old, and I belong to two worlds. I am conscious that down here I belong to two states. I settled here in 1857, going to Paynesville before the roads and bridges had the right of way. I was here when the territory became a state, and I always love to come back to Minnesota. It seems as though the horticultural interests of the world center in this society, and it is the best society in the world—there is nothing like it. I do not know another like it anywhere. I am always glad to be with you, and if I can add anything of interest to the work you are doing I shall always be happy to do it. (Applause.)

The President: I am now going to call on some of the visitors, and I am going to call first on Mr. Kellogg, of Wisconsin. He is almost always with us, and we want a few words of greeting from him. (Applause.)

Mr. Geo. J. Kellogg (Wis.): I am just glad to shake hands with you. I am glad to meet these great workers in the cause of horticulture and humanity. It does me good to see the work they do. I rather thought you would get your membership up to three thousand this year, and I believe you are going to get it up to four thousand next year. Your secretary is doing good work, and I hope you appreciate him and what he is doing, but he has good backing because you all help to do that work. I am here as a delegate at large. I have been clear out to the western coast doing work in judging fruit at the great national apple show, and I am just chuck full of apples. I put one of the apples I brought with me on the stand this morning, but somebody stole it. I brought it from Spokane, and it is called the Spokane Beauty, but when I judged the fruit I

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crossed off the "Beauty." As I said before, somebody stole the apple from the stand. I don't know anything about its quality, and before expressing an opinion I would like first to cut it and try it. One of the exhibitors sent down a bushel for me, and this was one of the largest. There are others bigger than that, but the secretary would not let me put them on the table below, and he said I could not bring them up here to show them, but I brought this one. The apples that were shipped to Spokane to the National Apple Show comprised thirty carloads. There were fifteen carloads on exhibition in great racks containing 620 boxes, 15 tiers high and long enough to contain a carload on each side of the aisles, in a tent which covered a space of more than three acres. It was astonishing to see the apples. It did me good to see that Minnesota had two barrels of apples there. I am sorry they did not have the Northwestern Greening of a little better quality, so they might have got that fifty dollar prize.

There was $150 offered for a single box of apples. The box contest was wonderful. I helped distribute the prizes on two hundred plates of apples, and I think I made those people mad about four hundred times. There were 58 plates of Jonathan and 58 plates of Rome Beauty contending for two premiums, and I had to make 56 men mad who didn't get any prizes. We worked the thing down to ten plates and finally down to two premiums. Senator Dunlap of Illinois was one of the judges last year, and he was chosen by Prof. Van Deman this year. He took the precaution to shave his mustache, and I know the men he made mad would want to shave him all over. (Laughter.) The senator is just as fine a man as the strawberry that is named after him, and I want somebody to originate a new berry and call it "Mrs. Dunlap" that will beat his. She was there and helped me with the apples and the by-products of the apples. We had entry blanks for marmalade, preserves, butter and a whole lot of cider and vinegar. You can imagine how hard it is to decide when you have twenty gallons of jelly to taste. Mrs. Dunlap is an expert. I helped to open the bottles, and she awarded the premiums.

I worked there four days about night and day, and three times I called in Prof. Van Deman to help me out, but he only judged four hours on the 1,400 plates. By the way, Prof. Van Deman said he would have liked to have been with you, but he said he had been away from home so long he would like to get home. He had to stay two or three days after the close of the show. We should have had ten days to award those premiums. There were $25,000 in premiums, and we had to make all the awards in five days. There were only five of us at work. It was one of the finest experiences in my life, and I thoroughly enjoyed it. I am glad to be with you, and I waited two weeks on purpose to be with you. My ticket expires, and so I cannot stay longer than tomorrow night. I must be home on Thursday to save my ticket. I am glad to be with you, and I will make no further remarks. (Applause.)

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The President: We have with us another Wisconsin product, Mr. W. H. Hanchett, of Sparta. We would like to hear a word of greeting from him. (Applause.)

Mr. W. H. Hanchett (Wis.): I have been up here once before today, and this is putting it on rather thick. I am not much of a speech maker, and I don't know that I can say anything that would be of interest to you. I was very much pleased to hear that Minnesota had captured first prize on a barrel of apples at the Spokane show. I had the pleasure of visiting some of those wonderful western orchards myself this fall, and I came back with the thought that if we would put into our apple raising the same painstaking care that seems to be necessary to put in out there we could equal them in parts of our product and beat them in quality, and I don't know but what we might get just as much money out of an orchard. I had the privilege of visiting some sections in Oregon where they did the same as they do in Wisconsin, set out an orchard and then sit down and neglect it. I saw trees that were covered with moss, and I think the apples were covered with moss, and I could not help but think that culture and care would make a great difference in Minnesota and Wisconsin, the same as it does in Oregon, and I certainly believe there is a great future for apple growing right around here. (Applause.)

The President: I got a letter the other day from an editor of a prominent paper in Yakima, and he referred to the fact that only ten to fifteen out of a hundred are making a success of the business. He said that ten to fifteen per cent take and make a success of the work.

I am now going to call on Mr. Whiting, of South Dakota. He is a good man and a good nurseryman, and we shall be delighted to hear from him. (Applause.)

Mr. Geo. H. Whiting (S. D.): I do not know really what President Green had against me. He ought to know that I cannot make a speech. I simply want to say that I am certainly glad to be with you. I am glad to be with as good a sister as Minnesota has been to us. When I first came to Minnesota in 1858, when I was twelve years old, I heard it told that apples could not be raised in Minnesota. People said they had tried it, and they knew. They had planted a few trees they had got from Tom, Dick and Harry which, of course, died out, and they came to the conclusion that it was impossible to raise apples in Minnesota. After that they commenced to plant the Siberian crab, and they have kept at it ever since, and you all know the result. The result is that Minnesota can raise as good apples as any state in the Union. (Applause.) We ought to be raising a great many apples, and we are going to raise more, and, as Mr. Hanchett said a few minutes ago, we ought to take more pains in handling our fruit than we do. I spent two years in California, most of the time in orchard work, and I know that if Minnesota would give the same care and attention to pruning the trees and marketing the fruit as they do there, they could make a success of fruit growing and make some money, and I believe the time is

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not far distant when we will get onto those methods. We have got to come to it. If you expect to raise apples without any care you might as well try to raise corn without care and leave it in the field without cultivation. If we would employ the same methods they do on the western coast we would have most unbounded success. We have the quality, which they do not have in their fruit, and we could get the other qualities if we would work to that end. (Applause.)

The President: Mr. Kellogg inadvertently gave us a report of the apple show held in the west. There was a congress held at Council Bluffs, Iowa, and Mr. Kohler, as a delegate from this society, attended that congress. Now I am going to call on Mr. Kohler to follow up this talk of Mr. Kellogg's with some comments on the show at Council Bluffs. (Applause.)

Mr. A. R. Kohler: Speaking extemporaneously it seems to me is one of the hardest tasks I have. I was expecting to be called upon a little later for this report and had not been thinking about it until about two minutes ago when I received word that Secretary Latham wanted to see me. However, I shall try to manage the subject as well as I can.

The show was held at Council Bluffs from November 15 to 20, last month. It was held in a large auditorium which, however, was not sufficiently large to accommodate the entire show, and they had an annex built out over the street to the fire department building in which they accommodated another large portion of the show. It was quite a large showing and very attractive in many respects. Most of the showing was in plate stuff. There was some box fruit there also. The largest showing was made by the state of Iowa, in which state the show was held. There were showings also from Nebraska, from the central states and from the east, and there was a fairly large showing from Maryland and North Carolina, both of which were quite meritorious, and smaller showings from Maine and Pennsylvania, all plate stuff, and also a small showing from Virginia—these showings including a few samples of barrel stuff which were very good. There was also a showing from a number of the western states, Colorado and Idaho being represented, and also a showing of citrus fruits from Texas. Texas seems to have branched out in the growing of citrus fruits, and their principal showing consisted of tangerines, oranges, grape-fruit and also kumquats, the small orange-like fruit you find in small boxes at fruit stands. A very laudable thing about western fruit is its freedom from insect and other blemishes. They make it a business packing fruit free from insect or other blemishes. They must put up that kind of fruit in order to get the high prices they do. Their fruit was all very nicely colored, but it was no better colored than the fruit from the Missouri Valley.

One fault with the Iowa fruit was the insect injury done by the codling moth, and also by a fungous disease called the "sooty" fungus. All these things can be prevented by spraying.

Another lesson that can be learned from this show was the fact that those Iowa growers who were spraying with liquid spray were winning away from those exhibitors using dust spray. It is due to

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the use of dust spray. There is no denying the fact that the use of liquid spray gives the more satisfactory results. As spraying develops in Minnesota I hope you will not use the dust spray if you can possibly avoid it, that is, if you can get around on your land with liquid spray, because that is the only kind to use where you can possibly use it.

There were a number of men from Iowa who had good showings, notably Mr. Hummiston, from Iowa City, and another from Hamburg, in the Missouri Valley. The name of the man was Mr. Minser, and the particularly attractive part of his showing was the box fruit. He demonstrated the fact that the Missouri Valley can grow box stuff that is able to compete with western box stuff. If the Missouri Valley growers will only stick to the principle of putting up absolutely blemish-free fruit and pack it well, the same as the western growers do, there is no reason why they should not in every way be able to compete with them.

It also brought out the fact that one of the varieties that showed up well was the Wealthy, and it has called attention to the fact that Minnesota growers can grow the biggest fruit if they have enough to make it worth while, and if they will only put up fruit that is unblemished and well colored. The Wealthy would make a good boxing apple.

One notable thing in regard to the exhibition was the fact that there were so many land firms represented at the show. All the showing from the south and west was by people interested in selling land, and it almost gives the whole show an appearance of being a scheme to bring the land before the people. However, I have not enough absolute evidence to that effect to make an unqualified statement that it is gotten up by men interested in selling land, but it certainly seems to an outsider as though it had been gotten up by land men for that purpose.

Another phase of the fruit show I did not like very well was the lack of system in showing fruit. In a large show like that some systematic plan should be followed in order to give it the greatest educational value, but instead of following any systematic effort in the way of showing varieties together each man had his fruit all together. One ten-plate showing was in one part of the building and another ten-plate exhibit was out in the annex. The judges had to spend from one to three hours in finding all of the entries in one class. They had to run around considerably and do the scoring the best they could in order to award the prizes at all. Now, it is my opinion that all of those ten-plate entries should have been exhibited in one place. It was the same way with all other classes of fruit. It is my opinion that all varieties of the same kind should have been together on plates, and no variety competing for the same prize should have been in a separate place. If they had done so a great deal of confusion in judging would have been avoided. As it was they took their stand in the front end of the auditorium, and men and boys would bring the plates up there. In some cases where exhibitors were not present they had to hunt around for his plates before they could find them. All that could have

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been avoided if they had planned the arrangement of entries in some other and more systematic order, something which I deem very necessary in a large show of that kind.

On the whole the show was interesting, and would have been more so if the arrangement of the fruit had been such that people coming there could have had the opportunity to compare the varieties from different sections of the country. Had those varieties in each class been grouped together the people would have had the advantage of comparing the varieties grown in different sections of the country. There was a great variation. One thing I noticed, and that was that the fruit on plates from the east and west was a little bit firmer than the fruit on plates from the Missouri Valley. These variations were very interesting—but there is no use in describing them any further.

I may have something more to say at some other time in regard to boxing of fruit. Entries being made here in box production, there is considerable interest in that direction. (Applause.)

Discussion.

Mr. Geo. J. Kellogg (Wis.): I want to commend this young man's report. I happened to see his written report, and he scores right and left. I do not mean to say that he says anything that is not so, but he takes them true to life.

The President: Well, that's right; he speaks of things just as he found them.

The President: It is now 4:15 o'clock, and next on the program we have the Hon. W. M. Hays, Assistant Secretary of the Department of Agriculture. It is hard for me to give him his full title, because ordinarily I think of him as just "Hays." Prof. Hays will talk to you on the subject of plant breeding. He comes to you on his way to Omaha, where he will attend the meeting of the National Plant Breeders' Association, and I am sure it gives us all great pleasure to have Prof. Hays with us on this occasion. (Applause.)

Hon. W. M. Hays: I nearly called him "Sam." He and I grew up here together as boys at the experiment farm, and we had many good times together and have seen a great many changes take place. I am delighted to meet you, and I wish to greet this society on the part of the United States Department of Agriculture. We are ever ready to co-operate with you and to help build up the state local organizations which are dedicated to country life betterment.

Hon. W. M. Hays, of Washington, D. C., then delivered a lantern address on the subject of "Breeding." (See index.)

WEDNESDAY MORNING SESSION.

The preliminary meeting was in charge of Prof. F. L. Washburn, who conducted a "Question and Answer Exercise" on the subject of "Insects and Fungous Diseases." (See index.)

We will now take up the morning program as per schedule. The first number has to do with the organization and conduct of a fruit growers' association. Mr. Sargent, the author of the paper, is not

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here this morning, but Mr. Wright of the same association is here, and he will read Mr. Sargent's paper.

Mr. R. A. Wright then read a paper prepared by Mr. C. A. Sargent, Secretary of the Excelsior Fruit Growers' Association, Excelsior, explaining the "Organization and Working of a Fruit Growers' Association." (See index.)

The President: The next number will be on the topic of growing apples commercially and getting them on the market, and this subject will be taken up by Mr. D. W. Longfellow, a commission merchant here in Minneapolis, and whom many of you know.

Mr. D. W. Longfellow, of Minneapolis, then addressed the society on the subject of "Commercial Apples and Getting Them to Market." (See index.)

Discussion.

The President: We will now pass on to the next subject, which will be taken up by Peter Peterson, who is a gardener at Atwater, and who will tell us why five acres is enough.

Mr. Peter Peterson, of Atwater, then read a paper on the subject of "Five Acres Enough." (See index.)

The President: If there is no discussion of this paper, we will take up number four on the program, and Dr. Huestis will tell us how an amateur handles his strawberry patch.

Dr. O. M. Heustis, of Minneapolis, then described the experience of "An Amateur in a Strawberry Patch." (See index.)

The President: The next paper will be presented by Professor Waldron, of the Agricultural College of North Dakota.

Prof. C. B. Waldron, Professor of Horticulture, Agricultural College, Fargo, N. D., read a paper upon the subject of "Western Horticultural Methods Applied to Minnesota." (See index.)

Discussion.

The President: We have with us this morning, Mr. Nourse, the delegate of the Wisconsin Society, from Bayfield. I want to say to Mr. Nourse that we are glad to have him here, and we want our people to know who he is, and to see him, and for that reason I am going to ask him to come up here and say a few words.

Mr. Harvey Nourse (Wis.): It gives me great pleasure to be here with the Minnesota people at this meeting. This is the second time I have attended one of your meetings, and I know that your deliberations will be helpful to me, and I trust that I may be able to reciprocate to the extent of being of some service to you. I am proud of the section of country I represent, as I come from the Bayfield Peninsula, and I hope I will become acclimated in your state here. When I left Monday morning, the mercury at our place was twelve above, and coming here the next morning I found it four below, which made me shiver. It reminds me of a story they tell up in our country that might be worth repeating: It is said that someone living in the city of Bayfield, died not long ago, and in seeking entrance at the gate of Heaven, he met Saint Peter, and told him who he was and where he was from, and Saint Peter gave him the freedom of

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the heavenly city. Someone from another town near Bayfield, also asked for admittance, and Saint Peter told him he could go in and have the freedom of the city. He said everything was so natural; beautiful trees, magnificent streets paved with gold, and a river of pure water flowing through the midst of the city. He wandered around in perfect enjoyment—he had never been so happy in all his life—but while he was looking about at the beautiful surroundings, he noticed, a little off from one street, a pen, and in this pen there were quite a number of people. He thought that everybody had the freedom of the city, and he could not understand why it was necessary that some of the people should be kept in a pen. So he went back to the gate where he had previously sought admittance, and found Saint Peter and said to him, "Saint Peter, I thought that everybody was at liberty in Heaven, but in looking around I noticed a pen in which are confined a number of people. Will you tell me why those people are in that pen?" Saint Peter replied, "That is easily explained. Those people in that pen come from Bayfield, and if we did not keep them penned up for a couple of weeks, they would go back." (Laughter.)

Dr. Heustis: I understand a barrel of apples from Minnesota took a prize at the Spokane apple show.

Mr. Kellogg: Yes, it was the Wealthy that took the $100 prize. The Northwestern Greening took a $50 prize, because they were a little inferior. They were grown down here at Lake City.

The President: The florists meet with us this year for the first time, and they have a delightful program. The president of this society is Mr. Theodore Wirth, Superintendent of Parks, Minneapolis, a man who has made a great name for himself here and at other places—a man whom you ought to know and whom it is a pleasure to meet. At this time I am going to turn the meeting over to the Minnesota State Florists' Society, of which Mr. Wirth is President, and I hope you will all remain and give them a good audience.

MINNESOTA STATE FLORISTS' SOCIETY.

The meeting of the Minnesota State Florists' Society was called to order at 11 o'clock by the President, Mr. Theodore Wirth, who delivered a brief "introductory" address.

Theodore Wirth: As your president has said, this is the first time we are with you as an auxiliary organization. Our association is young; it was only formed two years ago, and when Mr. Latham and Prof. Green extended an invitation to become an auxiliary of your society, we gladly accepted. You know the old German saying:

"Wer nicht liebt Weib, Wein und Gesang
Der bleibt ein Narr sein Leben lang."

I might add to this that he who does not love flowers is also a fool. Some of you might substitute flowers for wine. I am frank to say that I would add flowers to make life worth living.

Some of our florists in town have brought down a few flowers.

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We have at our right here some poinsettas, and I understand at this time of the year, in California, the hillsides are covered with them, and it seems as though it must be a beautiful sight. I only wish we could go with our friend, Mr. Loring, who is going to California some day next week, if only for the purpose of seeing the beauty of those hillsides. We also have some chrysanthemums, held over by our friend, Mr. Smith, of Lakewood Cemetery. We also have some primula and some Japanese candido, with some azaleas, and a few roses. At this time we have more carnations and azaleas than anything else. This is about all we have at this time of the year, but they are by no means the best plants to be found. It is cold outside, and it is rather a risky thing for a florist to send his choice flowers out in a temperature that is below the freezing point.

I do not want to make any more remarks at this time, and we will take up the numbers as they appear on the program, and I will at this time call on Mr. Smith of Lakewood Cemetery, who will read a paper on the topic of house plants and how to treat them. If you are at all interested, you will know there is nothing nicer than a few plants in a room, to make it cheerful at this season of the year. It makes the surroundings much more agreeable. I take pleasure in calling upon Mr. Smith.

"House Plants and How to Treat Them" was the topic as presented by Mr. C. J. Smith, Manager of the Lakewood Cemetery greenhouses, Minneapolis. (See index.)

The President: We will now have a paper by Mr. Meyer, who will talk about herbaceous plants for Minnesota.

Mr. E. Meyer, the Superintendent of Minneapolis Parks Nursery, then read a paper on the subject of "Herbaceous Plants for Minnesota." (See index.)

The President: We will now listen to Mr. Swanson, who will tell us about spring flowering bulbs for Minnesota.

Mr. A. S. Swanson (St. Paul) then read a paper on the subject of "Spring Flowering Bulbs for Minnesota." (See index.)

The President: This concludes our program, and as it is getting late I do not want to take up any more of your time. I wish to say this: that floriculture is simply an adjunct of horticulture, and our interest in the two is common, and I want to assure you we will be with you next year and every year thereafter (Applause). I want to thank you for the very kind attention you have given to the subjects presented, and I hope you will all be benefited by what you have heard.

On motion of Mr. Nagel, a vote of thanks was tendered the L. S. Donaldson greenhouses, the Lakewood Cemetery greenhouses, and Will Brothers for the excellent floral display.

WEDNESDAY AFTERNOON SESSION.

The preliminary half hour "Question and Answer Exercise" was led by Mr. Hamlin V. Moore, State Inspector of Apiaries, Bird Island, the subject being, "The Bee in Horticulture." (See index.)

The regular session of the society was called to order by Prof. Green, at 9:30 o'clock.

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The President: We will open our afternoon program by having Mr. Older explain the structure and composition of the potato.

"The Structure and Composition of the Potato" was the subject of a paper presented by Mr. F. E. Older, of the State Agricultural College. (See index.)

Discussion.

Prof. A. R. Kohler, Assistant Professor of Horticulture, St. Anthony Park, then presented a paper describing "The Apple and Its Parts." (See index.)

The President: We are now going to hear from Mr. Ludlow, of Worthington, about the origin of the Okabena apple. (Applause.)

"The History of the Okabena Apple" was then detailed by Mr. H. J. Ludlow, the originator, of Worthington. (See index.)

The President: We want to give this room over to the Woman's Auxiliary precisely at 3 o'clock. The last number on the program is a talk by Mr. Wyman Elliot about the seedling apples that are on exhibition in the fruit room below. We are always delighted to hear from Mr. Elliot on this subject, and I know you will all be interested in what he has to say.

"Seedling Apples on Exhibition" were then described by Mr. Wyman Elliot, Chairman of the Awarding Committee. (See index.)

The President: I have here a resolution that has been handed in, which I will read. It is in reference to Mr. S. M. Owen, who is confined to his home by sickness and cannot be with us this year.

Resolution:

On motion of Mr. A. J. Philips the resolution was unanimously adopted.

The President: The Chair will appoint Mr. A. J. Philips and Judge Moyer as a committee to convey this resolution to Mr. Owen at such time as may be convenient to them.

It is now time to turn this meeting over to the Woman's Auxiliary. I want to call your attention to their program. It is an unusually good program, and it is something that should interest every one of you. It is full of good things, and I especially want to call your attention to item No. 4, which is a number to be presented by Mrs. Howard Murray Jones, which relates to the feature of giving instruction in domestic science at our state fair. Mrs. Jones has been Professor of Domestic Science at the Kansas Agricultural College for fifteen years, and has for a number of years had charge of the state fair school, at the Illinois fair, of which school she has made a success, and she is with us at this time and will in due time tell us about her work.

WOMANS' AUXILIARY.

The meeting of the Woman's Auxiliary was called to order by Miss Emma V. White, the President, at 3 o'clock.

The President: We have such a good program, and it is so full that I am not going to take up any time in making preliminary remarks except to say that I most cordially welcome you and hope you

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will stay to hear our excellent program. The first number on the program will be taken up by Mrs. Robertson, who was formerly at St. Anthony Park and whom most of you know. She will speak on horticulture and the farm home.

Mrs. Wm. Robertson, instructor at the Crookston Agricultural School, then read a paper on the subject of "Horticulture and the Farm Home." (See index.)

The President: I rather suspect this paper has been written from personal experience and is not simply a theoretically made up paper. The next number on the program is a paper by Prof. Lange, but he has sent word that he is unable to be present, and his paper on school gardens will be read by Miss Helena Mann, of St. Paul.

Miss Helena Mann then read the paper on "School Gardens," prepared by Prof. D. Lange, of St. Paul. (See index.)

Discussion.

The accomplishment of "The Fifth Year in Civic Improvement Work at Lake City" was then described by Mrs. Anna B. Underwood, of Lake City. (See index.)

The President: I have now the pleasure of introducing Mrs. Jones, who will tell us of the work she has inaugurated in Illinois, especially that pertaining to the subject of domestic science—Mrs. Howard Murray Jones. (Applause.)

Mrs. Howard Murray Jones, of Minneapolis, leader of the Domestic Science School at the Illinois State Fair, then addressed the Auxiliary, giving an outline of the work of "A State Fair School of Domestic Science." (See index.)

This concluded the program of the Woman's Auxiliary, and the regular program of the society was taken up, Prof. Green resuming the chair.

The President: We will now pass on to the next subject, which will be a lantern talk by Roy Chapman, who is the son of N. S. Chapman, who represents one of the institute corps, and he is to talk to us about our Minnesota birds.

Before Mr. Chapman proceeds I want to say that our good friend, Mr. Kellogg, who has been with us at almost every meeting for years, informs me that he is under the necessity of leaving for his home today, and I am going to get him up here to have him bid you goodbye.

Mr. Geo. J. Kellogg (Wis.): I was requested to say something about pears. I had remarkable success with pears this year. I worked for forty years in Rock county and Janesville and spent hundreds of dollars in growing pears and never grew but a peck. I went to Lake Mills, which borders a lake where there is clay soil around the borders of the lake for two or three miles, and there I set out quite a quantity of trees. I think I set out some fifteen. I planted some Flemish Beauty and they killed down, and my Bartlett were killed. That was eight years ago. Then eight years ago I planted two French varieties, and they are the only two varieties I have. One variety has borne three years and the other one two, and they are both as large as a Bartlett and of better quality. If I had let them

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bear a moderate crop, they would have been as big as my fist, but as it was, they were so loaded the branches had to be tied up all around. All the protection I gave them during the winter was to draw the branches together and tie them up with a few cat tails and leave them in the open to freeze. I do not know but what they will bear themselves to death, but I have a crop of scions from them, and if any of you have pear trees, I will send you some of these scions to top-work on the Kieffer. I think the thing to do in this country is to top-work My wife says these pears are fine to cook. I have these two varieties, and if anybody has pears they want to top-graft they want to write to me.

I have been waiting for two weeks to attend this meeting. I came back from Spokane to spend Thanksgiving here and to attend this meeting, but the limit on my ticket expires tomorrow, and I must go home. I have been enjoying these two days I have spent here wonderfully well. You have never had a better show of fruit than you have at this meeting. I want to thank you for your courtesy and wish you well, and I hope to be with you for twenty years yet.

The President: We are delighted to have Mr. Kellogg with us, and I knew you would not want him to go away without hearing from him, although we are running rather late in the afternoon. I also hope Mr. Kellogg may be with us at least twenty years longer in his customary health and vigor.

THURSDAY MORNING SESSION.

The preliminary session was opened at 9 o'clock and consisted of a "Question and Answer" period conducted by Prof. S. B. Green, on the topic of "Operating a Trial Station."

The regular session of the society was called to order by the President, Prof. Green, at 9:30 o'clock.

The President: We will first have the report of the Executive Board, of which Mr. Wyman Elliot is chairman.

Mr. Wyman Elliot then submitted the "Report of the Executive Board." (See index.)

Mr. Elliot: I want to state here that in talking with a friend of mine yesterday and telling him what we were trying to do along this line of packing fruit and teaching our people how to handle and pack their fruit, he said to me, "You can put me down for $25.00 of that premium." Now, I want to know if there is any other member who has a five, ten, or twenty-dollar bill to put alongside of that so we can offer a substantial premium to northwestern expert packers and handlers, and we want to engage the services of some one who is an expert along this line to show our people next year just how to handle and pack their fruit. In the fruit room below there are a great many packages, but there is not a single commercial package that would stand the test in any market—not one, they are all faulty. The fruit is good, there is nothing the matter with the fruit, but it is not put up right. In addition to having good fruit, it must be handled in the proper way. I want you to think this matter over.

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The President: We will next listen to the report of the Secretary, Mr. Latham.

"The Report of the Secretary" was then submitted by Mr. A. W. Latham. (See index.)

The President: If there is no discussion of this report, we will next hear the report of Mr. Strand, the Treasurer.

Mr. Geo. W. Strand then presented "The Report of the Treasurer." (See index.)

President Green then read a letter from Mr. Chas. F. Gardner, of Osage, Iowa, expressing regret at his inability to be present at the meeting.

The President: We will now call for extemporaneous reports of vice-presidents. These reports are not to be read. There are nine of them, one from each congressional district in the state, and there will not be time to read reports from each, but the plan is that the vice-presidents will come forward to the platform and give us a two-minute talk about some salient feature of their work during the past year. Since Mr. Howard and Mr. McKisson of the first and second districts are not here, I will call upon Mr. Gibbs, of the fourth district, for a few minutes' report. (See index.)

The President: Mr. Howard, of the first district, is now present, and I am going to call on him for a two-minute report. (See index.)

The President: We will now hear from Mr. Frank Brown, of the sixth district. (See index.)

The President: We will now have a short report from Mr. S. J. Walgren of the seventh district.

The President: Just give us a short synopsis. (See index.)

The President: If Mr. Groat, of the eighth district, is present, we would like to hear from him. (See index.)

The President: Now we come to the ninth district, which is represented by our old friend, Senator Probstfield, and we want to have a short report from him. (See index.)

The President: This finishes the reports of vice-presidents, and we will now have short reports from the superintendents of trial stations, and the first one I am going to call upon is Mr. Dewain Cook, of Windom. (See index.)

The President: Now, I am going to call on Senator Cashman, from the Owatonna station. (See index.)

The President: We will now hear from the Excelsior station, of which Mr. A. B. Lyman is the superintendent. (See index.)

The President: We will now have a short report from the Montevideo station, by Judge Moyer. (See index.)

The President: I am sorry to say that Mrs. Stager, of Sauk Rapids, is not with us this year, and we will next hear from Mr. Cowles. of West Concord. (See index.)

The President: We will now hear from our friend, Capt. Reed, of the Glencoe station. (See index.)

The President: We will now hear from Mr. Seth Kenney, of Waterville. Mr. Kenney is going to tell us something about a project he is carrying out. (See index.)

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The President: We have once heard from Mr. Brown, of Paynesville, in his capacity as vice-president, and as he is also conducting a trial station we will hear from him again in that capacity. (See index.)

The President: This concludes the reports of superintendents of trial stations, and I will now call for the reports of auxiliary societies. The first one is the Minnesota Rose Society, and I am going to ask Mrs. F. H. Gibbs to tell us something of the work of that society. (See index.)

The President: We will now hear from Prof. Robertson, who represents the Red River Valley Horticultural Society. (See index.)

The President: We will now hear from one of our younger auxiliaries, which is the Northeastern Minnesota Horticultural Society, and is represented by Mr. A. B. Hostetter, of Duluth.

Mr. A. B. Hostetter (N. E. Minnesota Society): The Northeastern Society is very young, and we want and need some help. We would like very much to have a trial station established up there. I think there is a possibility in that clay soil along the north shore of Lake Superior for growing a variety of fruit. I do not want to take up any time, I simply would like to call the attention of the proper authorities to the matter of giving us a trial station.

The President: We come now to the adoption of the fruit list, and Mr. Andrews, who is chairman of the committee, will report.

Mr. J. P. Andrews, Chairman, then submitted the report of the committee on fruit lists and moved its adoption.

Capt. A. H. Reed moved that the report of the committee be amended to the effect that the Peerless be recommended as worthy of trial instead of as being valuable in some locations.

Mr. Clarence Wedge offered an amendment to the amendment striking the Peerless entirely from the list recommended by the society.

Capt. Reed moved that the entire matter be laid on the table.

The motion being duly seconded and a vote being had, the motion to lay on the table was lost.

The question upon the amendment offered by Mr. Wedge providing for striking the Peerless from the list was then put to a vote and prevailed.

Pursuant to the motion offered by Mr. Andrews, the report of the committee on fruit lists was adopted as amended.

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THURSDAY AFTERNOON SESSION.

The preliminary "Question and Answer" exercise on the subject of "The Fruit Garden" was opened at 1:30 o'clock and was conducted by Mr. R. A. Schutz, lecturer on horticulture in the Minnesota Farmers' Institute, Le Roy.

The President: It is now two o'clock, and we must turn the meeting over to the Minnesota State Rose Society, of which Mrs. Ruff is President. The society has a very interesting program, and I trust you will all be interested enough to remain to hear the program.

MINNESOTA STATE ROSE SOCIETY.

MRS. D. W. C. RUFF, PRESIDENT, IN THE CHAIR.

The meeting of the Minnesota State Rose Society was called to order by the president, Mrs. D. W. C. Ruff, at 2 o'clock.

The President: I want to say just a few words in opening because we want to give all the time to our program. If I could tell you how interesting our society meetings are and how much the society had increased during the past year, I know you would join the rose society. I stand a little bit in awe of Prof. Green and Mr. Latham, so I dare not say all of the nice things I would wish to say of the rose society. In connection with the Gardening Club, of St. Paul, I had occasion, as secretary, to write to Country Life in America and to Suburban Life, asking for some advice in regard to conducting the affairs of the club. They answered my letter and offered a few suggestions, and among other things, they said I could do not better than consult with Prof. Samuel B. Green, who was prominent in that sort of work in this country, and with Mr. Latham, equally prominent. (Applause.) When I found they had such national reputations, I stood very much in awe of them, and when they said they would give us just this one hour for our program, I thought it would not do to trespass beyond the time, and we will, therefore, turn immediately to our program.

The first number on our program is an address by Prof. Haynes, of the State University, who will speak of the influence of flowers in the home.

"Influence of Floral Adornment on Home Life," was the subject of the paper presented by Prof. A. E. Haynes, of the State University, Minneapolis. (See index.)

The President: I think Prof. Haynes must have been a very good boy, and I think most people are under a good influence if they have a garden. In St. Paul we are very proud of Mr. August Swanson for what he has achieved in flower culture, and especially what he has done in this club proposition. He has been a very willing judge at flower shows, and this afternoon he will speak on the value of those exhibitions.

"The Value of Flower Exhibitions" was then described by Mr. A. S. Swanson, florist, St. Paul. (See index.)

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The following additional numbers on the program were then presented: "A Woman and Her Roses," by Mrs. H. B. Tillotson, Minneapolis. (See index.)

"The Culture of Pansies," Chas. Rixon, gardener, St. Louis Park. (See index.)

"Development of Natural Resources for Park Purposes," Chas. H. Ramsdell, landscape architect, Minneapolis. (See index.)

Discussion.

ELECTION OF OFFICERS.

The regular session of the Horticultural Society was resumed at 3 o'clock, President Green in the Chair.

The President: The time has arrived for the annual election of officers. I will appoint as tellers F. E. Cutting, D. M. Mitchell and Le Roy Cady. The first office to be filled is that of president, and nominations are now in order.

Mr. A. Brackett: Fellow Members of the Minnesota Horticultural Society: There is not one of you here but will agree with me that Prof. Green is one of the best men we could possibly have as President of this society—and in that connection I want to say that we have one of the best horticultural societies in the United States, with the largest membership of any horticultural society in the country, and I believe we should have the best men to be found to conduct the affairs of the society; and since I can think of no man better qualified for the position than Prof. Green, I have the pleasure of placing him in nomination. (Applause.)

Mr. J. M. Underwood: I wish to second the nomination for the reason that I believe no better selection could be made.

A ballot was then taken with the result that Prof. Green was unanimously elected president for the ensuing year.

The President-Elect: I am greatly pleased and proud to be the presiding officer of this society and have the election come to me unanimously. I can assure you I feel it is no small matter. I do not mind confiding to you that I enjoy the duties of this position. I am willing to be frank with you in this matter. I like the society, I enjoy meeting the representatives of horticulture, I enjoy working with the officers, and it is a pleasure to be in touch with people who are doing such a grand work, and I congratulate you upon being members of a society that is so thoroughly in touch with horticulture, not only in this state but throughout the entire Northwest. (Applause.)

The President: The next office to be filled is that of a successor to Mr. Wyman Elliot, as a member of the Executive Board for three years.

Mr. J. M. Underwood placed in nomination the name of Mr. Elliot to succeed himself.

Mr. Alfred Terry moved that the secretary cast the unanimous ballot of the society in favor of Mr. Elliot.

The President: That can be done if there is no objection—if the consent is unanimous.

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The Secretary: I take pleasure in casting the unanimous ballot of the society in favor of Mr. Elliot as a member of the Executive Board, and the only surviving charter member of the State Horticultural Society.

Mr. Wyman Elliot: Fellow Members, Brothers and Sisters: While I have held this position for many years, it has not rounded my shoulders or increased my burdens to any appreciable extent, but on the other hand it has been a pleasure to serve you as well as my ability would permit, and I wish to say this, that whenever you see fit to place someone in my position, I shall be willing to step out. (Applause.)

The President: The next office to be filled is that of a second member of the Executive Board, the position which Senator Thomas Cashman now holds, whose term of office as a member of the Executive Board expires this year.

Capt. A. H. Reed placed in nomination the name of Hon. Thos. E. Cashman.

On motion of Mr. Underwood, the secretary was instructed to cast the unanimous ballot of the society in favor of Mr. Cashman.

The secretary cast a ballot of the society in favor of Mr. Cashman to succeed himself as a member of the Executive Board for three years.

The President: The next officer to be elected is someone to succeed Mr. Geo. W. Strand, who has been treasurer for several years.

Mr. R. A. Wright placed in nomination the name of Mr. Geo. Strand for treasurer, to succeed himself.

On motion of Mr. Underwood, the secretary was instructed to cast the unanimous ballot of the society in favor of Mr. Strand.

The Secretary: I take pleasure in casting the ballot of the society for Mr. Strand. We always know where the money is when Mr. Strand is treasurer.

The President: It is customary to change the vice-president each year, so that we may have a report from a different person at each meeting. The principal duty of the vice-president is to have a general idea as to horticulture in his vicinity and to make a report on it to this meeting. There are nine vice-presidents, one from each congressional district, and the secretary has, as in former years, prepared a list for nomination, which he will read to you. There is no desire to railroad this thing through or do anything of that sort, but simply to expedite the election of the vice-presidents, and the society is absolutely free to nominate and elect anyone else in the place of any of those to be named.

Mr. Geo. W. Strand: I thank you very much for the honor of being placed in this position, and I trust that your confidence has not been misplaced. (Applause.)

The secretary then placed in nomination the following list of names, as vice-presidents:

First district, Walter A. Yahnke, Winona; second district, H. J. Ludlow, Worthington; third district, W. L. Parker, Farmington;

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fourth district, D. W. C. Ruff, St. Paul; fifth district, E. F. Pabody, Minneapolis; sixth district, August Loegering, Long Prairie; seventh district, M. Soholt, Madison; eighth district, A. W. Patten, Mora; ninth district, Mrs. Wm. Robertson, Crookston.

The President: Someone may have some better person to suggest from his district, and it will be perfectly proper to nominate anyone else in place of anyone on this list.

On motion of Capt. Reed, the secretary was instructed to cast the ballot in favor of the list of vice-presidents as presented.

The secretary duly cast the ballot of the society, and the nominees were declared elected vice-presidents for their respective districts.

MINNESOTA STATE FORESTRY ASSOCIATION.

The annual meeting of the Minnesota State Forestry Association in the absence of the president, Mr. M. O. Nelson, was called to order by the vice-president, Prof. T. L. Haecker.

Prof. S. B. Green: I want to call your attention to the forestry program. The first is a paper by Mr. Scott Leavitt, who is supervisor of the largest reserve in the country. He is supervisor of the Superior reserve. I think it is 900,000 acres that Canada has set aside, and as much has been set aside on this side. Then we have several papers on the status of the forestry school. What we want is to make practical foresters of our students, and in order to do this we have followed the practice of sending them on a reserve to work. We have a dozen boys who were in the lumber camps for six weeks this winter, and we aim to put them in touch with the actual work. Several of these boys are going to speak. We also have on the program, Mr. Krueger, of Groton, S. D., who is the delegate from the South Dakota Horticultural Society, and who will speak on the subject of tree planting on the prairie. Mr. J. E. Rhodes, for many years secretary of the Northern Pine Association, and now with the Weyerhauser interests, will speak from the lumberman's point of view. It is a live wire, and it will do you good to get in touch with it. This meeting will be presided over by Prof. Haecker, who is vice-president. Mr. M. O. Nelson, who was elected president of this society a year ago, has gone into business in Oregon, and so Prof. Haecker takes charge of this meeting.

The Chairman: The first number of the program will be a paper by Mr. Leavitt, of Ely.

Mr. Scott Leavitt, Forest Supervisor, Ely, then read a paper describing the "Superior National Forest." (See index.)

Discussion.

The Chairman: I wish to announce the committee on nominations for election. I will appoint on that committee, Messrs. E. G. Cheyney, S. P. Crosby, and Le Roy Cady.

We will now listen to a paper by Mr. Weber, who is a student at the forestry school.

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Mr. H. G. Weber, of the Minnesota Forestry School, St. Anthony Park, then read a paper on the subject of "Preliminary Work in a Mexican National Forest."

The following additional papers were also presented:

"With the Forest Service in Montana," by Dean Martin, student of Minnesota Forestry School, St. Anthony Park. (See index.)

"Tree Planting on the Prairie," by Hon. A. W. Krueger, Groton, S. D., delegate South Dakota Horticultural Society.

Discussion.

The Chairman: We will now go on with our program. I think we have all enjoyed this discussion. The next number is not on the the program, but I think you will all be interested in what the gentleman will have to say, and I have the pleasure of introducing Mr. Rhodes, who was formerly secretary of the Northern White Pine Association and who will speak on this subject from the lumberman's standpoint.

Mr. John E. Rhodes, of Minneapolis, then addressed the society on the subject of "The Lumberman's Forestry Battle." (See index.)

Mr. S. P. Crosby, on behalf of the committee, submitted the report of the committee on nominations, and on his motion the report was unanimously adopted.

FRIDAY MORNING SESSION.

The preliminary session was held at 9 o'clock, and a "Question and Answer" exercise was conducted by Mr. E. A. Smith, Vice-President of the Jewell Nursery Company, Lake City, the subject for discussion being, "The Minnesota Nursery." (See index.)

The regular session of the society was then called to order by the president at 2 o'clock.

The President: The first number on the program deals with tomatoes in the home garden, and will be taken up by Mr. Frank Powers.

Mr. Frank W. Powers, Minneapolis, then described the growing of "Tomatoes in the Home Garden." (See index.)

Discussion.

The President: The next subject is growing rhubarb in winter and summer, by Mr. Mosbaek.

Mr. Ludwig Mosbaek, of Partridge, then read a paper describing his experience in "Growing Rhubarb in Winter and Summer." (See index.)

Discussion.

The President: The next number on the program is a talk about an experience with frozen apples, by Robert Wedge.

Mr. Robert Wedge: Before taking up this topic I want to say that, as the name implies, I have had only one experience in this line, and no doubt many of you had similar experiences with later varieties, and could doubtless make the topic more interesting than I. The question was asked Wednesday morning whether it would hurt

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apples to freeze, and it is my opinion that it does hurt apples to freeze.

Mr. Robert Wedge, of Albert Lea, then detailed "An Experience with Frozen Apples." (See index.)

Discussion.

The President: We must go on with our program, and I will next call upon Mr. Pfaender, to tell us about propagation with green wood cuttings.

Mr. Max Pfaender then described the "Propagation by Green Wood Cuttings." (See index.)

Discussion.

The President: We will now pass to our next number, No. 5, and Mr. Fred Cowles will tell us about the apple as a street and lawn tree.

Mr. F. J. Cowles, of West Concord, then read a paper on the subject of "The Apple as a Street and Lawn Tree." (See index.)

Discussion.

The President: I have here an invitation from the St. Paul Commercial Club, from the Public Affairs Committee, inviting us to hold our next annual convention in St. Paul.

The president then read a communication from the St. Paul Commercial Club.

The invitation was referred to the executive board.

The President: We will next hear from Mr. Andrews on the planting of the fruit tree.

Mr. J. P. Andrews, of Faribault, then read a paper dealing with the "Planting of the Fruit Tree." (See index.)

Discussion.

The next number on the program is a paper by Mr. Wedge on the grape.

"The Value of the Grape to the Minnesota Planter" was then discussed in a paper by Mr. Clarence Wedge, of Albert Lea. (See index.)

Discussion.

The President: We will now turn to a new subject, and this will be taken up by our good friend Harrison, who loves beautiful things. His subject is the iris, which is the national flower of France.

"The Iris—the National Flower of France—Its Culture and Uses in Home Grounds," was the subject of a paper read by Rev. C. S. Harrison, of York, Neb.

The President: This closes our regular program, but we still have a little while left before time for adjournment, and I am going to call for some of the "chinking" that you will find at the end of our program. I am going to ask Mr. Hunter to speak about horticulture at the state fair.

Mr. C. C. Hunter, Minneapolis, then read a paper upon "Horticulture at the State Fair." (See index.)

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FRIDAY AFTERNOON SESSION.

"The Question Half Hour" was opened at 1:30 o'clock with the discussion of the subject, "The Commercial Orchard," conducted by Mr. J. A. Howard, of Hammond. (See index.)

The regular session of the society was called to order by Prof. Green at 2 o'clock.

Mr. Dewain Cook: It has always been customary to extend the courtesy to visiting delegates of making them honorary members of the society for one year. I want to move that we extend the usual courtesy to delegates from neighboring states and elect them honorary members for one year.

The motion was duly seconded, and being put to a vote prevailed unanimously.

The President: Unless there is something further to bring up at this time, we will go on with our regular program. The first paper on our program this afternoon is a Wisconsin subject and has to do with orchard work in the Bayfield Peninsula, and you will probably be more interested in this work than you would in orchard work in the Yakima Valley; this is nearer home. This paper is by Mr. Nourse, delegate from the Wisconsin Horticultural Society, whom we have had the pleasure of hearing once before. He is going to talk to us about orchard work in the Bayfield Peninsula. We are delighted to have him with us, and we hope to hear something good from the Bayfield Peninsula.

Mr. Nourse (Wis.): I hope I shall be able to make a good impression upon you. When a boy I was always getting into difficulties, and I would get out of one scrape only to get into another, and that misfortune doesn't seem to have left me. I am in a difficulty like that right now. I was congratulating myself that, with this paper, I would be out of it, when here comes a letter from Secretary Cranefield, asking me to report to our society on this meeting and also to prepare a paper on small fruit culture up our way; so I am getting from the frying pan into the fire all the time.

Mr. Harvey Nourse, delegate from the Wisconsin State Horticultural Society, Bayfield, then read a paper, giving an outline of "Orchard Work in the Bayfield Peninsula." (See index.)

The President: The next number will be by Mr. O. W. Moore, of Spring Valley, who will tell us about the necessity of spraying.

Mr. O. W. Moore: We have heard quite a little at this meeting about the doctrine of picking and packing fruit, how it should be done, and how it is done in the coast states, and giving the results they obtain in those places where the packing of apples is done. This is very well and is as it should be, but remember, we must grow perfect fruit before we can pack perfect fruit. It must be free from blemishes, scabs and injury from insect pests, before the fruit can be packed and made presentable for market, and what I have to say is along this line.

Mr. O. W. Moore, of Spring Valley, then read a paper on the subject of "Spraying a Necessity." (See index.)

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Discussion.

The President: We pass now to the next paper, which is on the subject of lime and sulphur spray, by Mr. A. Brackett, of Excelsior, who is known to you as a successful institute worker and speaker on horticulture.

Mr. A. Brackett, of Excelsior, then read a paper dealing with the merits of "The Lime-Sulphur Spray." (See index.)

Discussion.

The President: We have given considerable time to this interesting discussion, but if we want to close on time, we must pass on to this interesting topic. No. 4 on the program has to do with the problem of the commercial orchard, of which Mr. Foote will speak.

"The Problem of the Commercial Orchard," was the subject of a paper read by Mr. P. H. Foote, St. Paul Park. (See index.)

Discussion:

I am going to call next for a paper by Mr. Tingley, who is going to tell us about his experience in top-working.

Mr. W. J. Tingley, of Forest Lake, then read a paper under the title of "My Top-Working Experience." (See index.)

Discussion:

The President: Mr. Philips, you and Judge Moyer were appointed as a committee to convey resolutions of sympathy to Mr. Owen. Have you a word to say in regard to what that committee did?

Mr. A. J. Philips (Wis.): In accordance with the resolutions passed here in reference to Mr. Owen, Judge Moyer and I went out there yesterday afternoon and spent two hours with him. He said it was a great satisfaction to him to be so kindly and thoughtfully remembered by the society, and it almost brought tears to his eyes, and he expressed the keenest regret that he was not able to be with us at this time. We had a very pleasant visit with him. He is not so very ill, but the doctor advised him to stay at home and rest. He expressed great satisfaction that the society remembered him in the way it did. (Applause.)

The President: There is a resolution before us that should be presented at this time.

The secretary then read resolution. expressing the endorsement by the horticultural society of Mr. J. M. Underwood as president of the State Agricultural Association.

On motion of Mr. Philips, the resolution was unanimously adopted.

Mr. Clarence Wedge: May I say a word at this time in regard to this matter? I think the resolution that has been presented embodies the sentiment of this society, but I think we ought not only to pass this resolution, but I think we ought to take off our coats and go to work for Mr. Underwood, and work hard. The State Agricultural Society, the state fair, of which we are also proud, which for many years has set the pace for size and quality for other states, shows a tendency, if not checked, to revert to former conditions, which

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some of us know were not very creditable to the state, and we do not want it to make a retrograde movement. Personally, I know something about the facts of the matter, and a good many members of our society know something of the character of the opposition which Mr. Underwood has to meet. I am not going to enlarge upon this matter, but if the horticultural interests do not stand together, and the state fair should take a backward step, we shall feel sorry and ashamed that we did not put Mr. Underwood where he belonged. Let us get busy and do something for him. (Applause.)

The President: That means when we get home, fix things up right, send the right kind of delegates to the convention.

Mr. Wyman Elliot: I want to make a supplementary report on behalf of the executive committee. We have with us some old members whom we want to honor by making honorary members. We have others who have done valiant work, and we wish to give them the same honor. They have all been with us a good many years. I wish to present a list of names recommended by the executive board for honorary membership for your consideration at this time. These names are recommended by the executive board according to the requirements of the constitution. I will ask the president to read the list.

The President: The following named persons are recommended for honorary life membership for a long and meritorious service in the horticultural society: A. Brackett, R. M. Probstfield, O. W. Moore, S. M. Owen, Chas. M. Loring, Thos. Redpath.

On motion of Mr. Elliot the recommendation of the executive board was unanimously adopted, and the persons whose names were submitted were declared duly elected honorary life members.

Mr. C. M. Loring: I assure you, Mr. President, and friends, that certainly is an honor I very little expected to receive. I did think there were some others who were to be named today for that honor, but I certainly did not expect to be in the list. I was looking over a poem of Whittier's the other day, and it struck me that I would, when this question came up, on this matter, and in reference to those that have gone before, I would read his poem, as I believe it applies to those people:

> "Give fools their gold and knaves their power,
> Let fortune's bubbles rise and fall;
> Who sows a field or trains a flower
> Or plants a tree, is more than all."

I think the gentlemen who have been connected so many years with this society and who have worked so patiently and arduously to produce what we see in the basement of this church, are men certainly to whom this poem should apply. I see on the wall "In Memoriam." There is one name that is left off which should be there, and that is "Judge D. A. J. Baker." When this association was organized, in the very early history of the society, Judge Baker was one of the most prominent workers, and I think at that time he was

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the only man I know of who was trying to propagate something we could raise in Minnesota. To each of those men whose names you see on the wall, the words of this poem amply apply. I am not going to take up any more of your time, but I assure you I appreciate the honor that has been conferred upon me, and I thank you very much. (Applause.)

The Secretary: In regard to Judge Baker, I want to say that while he was a member of our society years ago and attended the meetings, yet he has not been a member for many years. However, he was a hard worker while he was identified with the society.

TWO MINUTE TALKS.

(Occupying the last half hour of the 1909 meeting.)

Mr. Trafford Jayne then favored the audience with a beautiful closing song.

President Samuel B. Green: This brings our delightful gathering to a close, and I believe we shall all go home feeling that we are better for having been here, and take up our life work in a stronger and better way.

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Records of Executive Board for 1910.

Record of meeting held in the office of the secretary, at 8 p. m., Dec. 6, 1909.

Present: Wyman Elliot, S. B. Green, J. P. Andrews, L. R. Moyer and A. W. Latham.

The following accounts were audited and allowed:

A. W. Latham, expenses secretary's office, 11-27-08 to 6-23-09 ..... $3,061.97
A. W. Latham, expenses secretary's office, 6-23-09 to 11-23-09 835.96
Geo. W. Strand, treas., premiums summer meeting, 1909.... 152.25
Geo. W. Strand, treas., premiums annual meeting, 1908.... 305.40

—order for the last named account to be signed by the president upon presentation to him of receipts from those to whom the premiums were paid.

Upon motion of S. B. Green $25.00 per month was appropriated for 1910 to assist the Minnesota State Forestry Association in its work.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

Record of meeting held at Donaldson's Tea Rooms at 12:30 p. m., December 10, 1909.

All members of the board were present.

Wyman Elliot was elected chairman of the board for the ensuing year, and A. W. Latham was elected secretary for the same period.

The salaries of the officers for the ensuing year were fixed as follows: President, $25.00; secretary, $1,800.00; treasurer, $25.00.

It was decided to allow to each trial station $10.00 for the purchase of trial stock with the approval of the president. The trial station at Wrenshall was discontinued, and it was determined to locate one at Duluth instead.

The "local board" (Green, Elliot and Latham) were authorized to appoint all necessary committees.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

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Record of meeting held in the secretary's office, Minneapolis, at 8:00 o'clock p. m., June 22, 1910.

There were present at this meeting, Elliot, Green, Wedge, Cashman, Moyer and Latham.

The accounts of the secretary from December 6, 1909, to June 17, 1910, were audited and his bill for $2,944.81 for the same allowed, and an order on the treasurer for that amount was authorized.

The resignation of Mr. Ole J. Hagen, of Hendrum, as superintendent of trial station, made on account of removal from the state, was accepted with a record of thanks to Mr. Hagen for his efficient service.

Two new trial stations were created, one at Nevis with Jas. Arrowood as superintendent, and the other at Madison, M. Soholt, Superintendent.

Mr. H. J. Baldwin, of Northfield, was appointed vice president in the third congressional district to fill the vacancy therein caused by the recent death of Mr. W. L. Parker, of Farmington.

The amount of $25.00 was appropriated for the use of each of the vice presidents for necessary expenditures traveling in the district, examining orchards, seedling fruits or any other matter of special horticultural interest which the vice president may desire to investigate in connection with the preparation of his report.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

Record of meeting of the executive board held in the office of the secretary at 11:00 a. m., Wednesday, July 13th.

The following members of the board were present: Wyman Elliot, J. P. Andrews, J. M. Underwood, Clarence Wedge, Thos. E. Cashman and A. W. Latham.

The business under consideration at this meeting was the appointment of a successor to Prof. S. B. Green, deceased, to fill the office made vacant for the balance of the term until the regular election at the annual meeting. Mr. Thos. E. Cashman, of Owatonna, was unanimously appointed for this purpose and accepted the appointment.

Upon motion Mr. Clarence Wedge was selected to prepare for the executive board resolutions upon the death of our president to be published in the records of the society, and a copy to be sent to his bereaved wife.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Ex. Bd.

A. W. LATHAM, *Sec'y.*

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MEMBERSHIP, 1910.

Annual Members.

Aamath, L. H. ..... Twin Valley
Aamodt, A. W. ..... Hort. Bldg., St. Anthony Park
Abrahamson, E. E. ..... Buffalo Lake
Ackre, Isaac ..... Hampden, N. D.
Adams, R. H. ..... Magnolia
Ademmer, B., Jr. ..... New Prague
Adamek, Jos ..... Philbrook
Afdem, M. P. ..... Blooming Prairie
Agre, Ole H. ..... Sacred Heart
Ahsenmacher, W. J. ..... Ortonville
Ahlberg, John K. ..... Moose Lake
Ahneman, Geo. F. ..... Mazeppa
Ahlgren, C. J. ..... Cokato
Alton, Geo. B. ..... 1601 Univ., Mpls
Altkin, R. ..... 131 Birds Hill R., Winnipeg, Man.
Akenson, H. E. ..... Red Wing
Akre, R. M. ..... Winger
Alexander, Alfred ..... Dawson
Alm, John ..... Ayr, N. D.
Almquist, C. A. ..... Capas
Alme, O. T. ..... Ulen
Alfson, A. T. ..... Hancock
Allen, E. M. ..... White Bear
Algren, John ..... Hasty
Alwin, Leroy ..... New Ulm
Almquist, C. A. ..... Hastings
Alexander, Lee ..... Lynd
Allerson, Emil ..... Winthrop
Amtsbauer, F. H. ..... Franklin
American Sprayer Co. ..... Minneapolis
Amble, A. ..... Adams
Anderson, A. ..... Christine, N. D.
Anderson, Lars ..... Conosia
Andrews, J. P. ..... Faribault
Anderson, Louis ..... R. No. 1, Gladstone
Anderson, Alfred ..... New Germany
Anderson, J. C. B. ..... 1285 Portland Av., St. Paul
Anderson, J. A. ..... Rollag
Anderson, S. ..... R. 2, Tunbridge, N. D.
Anderson, W. H. ..... Hawley
Anderson, Clarence ..... Lake City
Anderson, V. C. ..... Sta. F., R. No. 3, Mpls.
Anderson, Oscar ..... Kennedy
Anderson, J. B. ..... 311 8th Av. W., Ashland, Wis.
Anderson, Alf. G. ..... Tamarack
Anderson, Miss Deborah ..... 627 E. 17th St., Mpls.
Anderson, C. J. ..... Fertile
Anderson, N. M. ..... Dassel
Andrews, T. E. ..... Forest Lake
Anderson, Wm. ..... Forest Lake
Anderson, Claus ..... 617 York St., St. Paul
Anderson, E. U. ..... Chisago City
Anderson, A. H. ..... Storden
Anderson, Henry ..... Lake Wilson
Anderson, Alex P. ..... 5558 Everett Av., Chicago, Ill.
Andrews, Gen. C. C. ..... Capitol, St. Paul
Anderson, J. A. ..... Box 785, Canby
Anderson, A. ..... 2563 Doswell Av., St. Anthony Pk.
Anderson, G. F. ..... Anderson, Emil ..... 5235 Upton Av. S., Mpls.
Anderson, C. Aug. ..... Browerville
Anderson, D. E. ..... Maple Plain
Anderson, C. L. ..... Excelsior, Box 107
Anderson, Peter ..... Moose Lake
Anderson, H. M. ..... Moose Lake
Andrew, Harry ..... 5327 Lyndale Av. S., Mpls.
Anderson, Peter ..... Glenwood, R. 1
Anderson, M. S. ..... Jackson
Anderson, And. A. ..... Garfield, R. 2
Anderson, Martin ..... Grove City
Anderson, A. O. ..... Hanska
Anderson, C. O. ..... Vesta
Anderson, Carl ..... Vesta
Anderson, Oluf ..... Tracy
Anderson, Alberg ..... Tracy
Anderson, C. G. ..... Hickory
Anderson, And. ..... Forest Lake
Anderson, Henry A. ..... Storden
Anderson, Ephriam ..... Pelican Rapids
Anderson, Arthur ..... Bricelyn
Arlington High School ..... Arlington
Armitage, C. W. ..... Canby
Armstrong, H. R. ..... Chatfield
Arnleend, A. E. ..... Dassel
Arndt, Carl ..... Boyd
Arrowood, Jas. ..... Nevis
Arhart, Louis ..... Gibbon
Arens, H. ..... Jordan
Arnts, Wm. ..... Jordan
Archer, Louis ..... Jordan
Arneson, M. ..... Shelly
Aschbach, Beruh ..... Ada
Aspden, Herbert ..... Excelsior
Atwood, Geo. H. ..... Park Falls, Wis.
Aune, Martin ..... Starbuck
Aune, Olaf ..... Underwood
Austin, Miss Mary J. ..... 503 Sellwood Bldg., Duluth
Austin, O. A. ..... McVille, N. D.
Austin, H. H. ..... Minneapolis
Audus, R. J. ..... Hamel
Augustus, Mrs. S. J. ..... Calio, N. D.
Averill, F. A. ..... Excelsior
Ayres, Philip W. ..... Concord, N. H.
Ayers, L. U. ..... New Richmond

Badrann, Peter ..... Harvey, N. D.
Baird, Rev. And. B. ..... 247 Colony St., Winnipeg, Man.
Bailey, J. Vincent ..... Newport
Baillif, R. L. ..... Bloomington
Bacheller, T. T. ..... Forest Lake
Bacheller, Mrs. Emma M. ..... Forest Lake
Baalson, H. E. ..... Brooten
Baalson, A. E. ..... Brooten
Baglien, Hans H. ..... Rothsay
Bade, W. C. ..... Echo
Babbidge, Mrs. H. N. ..... Prior Lake
Backus, Mrs. C. J. ..... 580 Holly Av., St. Paul
Baldwin, H. J. ..... Northfield
Ball, C. E. ..... Delano
Baklund, C. A. ..... Willmar
Baker, H. F. ..... 4629 Harriet Boul., Mpls.
Balgaard, Jos. ..... Ashby
Baker, Ed ..... Sandstone
Bakke, Joch ..... Hanska
Bankol, O. M. ..... Starbuck
Baker, L. K. ..... Odanah, Wis.
Barton, Mrs. Isabella ..... Excelsior
Barrows, Morton ..... Globe Bldg., St. Paul
Bartram, Mrs. C. S. ..... 1999 Iglehart St., St. Paul
Barclay, J. M. ..... Madison Lake
Barnstad, Ole ..... Willmar
Barton, Henry ..... Davidson, Sask.
Barsch, Fred E. C. ..... Gary
Bartlett, Lester ..... Cass Lake
Bartelson, Harvey ..... Fergus Falls
Barsness, P. O. ..... Cyrus
Barnes, J. U. ..... 705 Onelda Bldg., Mpls.

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Bartsch, C. G.....Mankato, R. 2
Barnes, Rev. O. A.....Wintnrop
Barth, L. L.....
Care Ed Hines Lbr. Co., Chicago, Ill.
Bauney Bros.....St. Cloud
Bauman, Wm. .....Delano
Bauman, F. C.....Prior Lake
Bateman, E. C.....Monticello
Bayer, W. C.....Herman
Bates, W. K.....Stockton
Bates, A. N. .....Excelsior
Bayard, P. C. .....Eden Prairie
Bates, Allen .....Tracy
Batho, Geo. .....
..406 Maryland St., Winnipeg, Man.
Beebe, H. U. .....Lake City
Baxter, Hector .....Minneapolis
Beach, Wesley .....Excelsior
Bell, F. W. .....2532 Nicollet Av., Mpls.
Becker, J. C. .....Adrian
Behr, Aug. .....Fulda
Beardsley, B. F. .....
.....807 Ashland Av., St. Paul
Bedburg, Peter .....Dunnell
Bean, A. C. .....Dundas
Becker, Wm. H. .....Montgomery
Behm, Chas. .....Wood Lake
Beals, C. R. .....Miller, S. D.
Beckstrand, A. G. .....Brookfield
Behm, Geo. C. .....Waseca
Beckwith, A. E. .....Dodge Center
Beardmore, H. J. .....Warren
Bell, F. S. .....Winona
Bemidji Lbr. Co.....Bemidji
Berrisford, E. S..386 Robert St., St. Paul
Benjamin, J. F.....Hutchinson
J. B. Berry .....Linwood Pl., St. Paul
Berger, Geo. .....Arlington
Berry, Frank .....Stillwater
Benhardus, Martin.....Battle Lake
Benson, Edwin .....Jackson
Bentley, Mrs. Annie.....Twin Valley
Bergh, N. N. .....
....American Express Co., St. Paul
Bergh, M. P. .....Madison
Benson, Hobert .....Gibbon
Berg, I. I. .....Climax
Berthelsen, Christ .....Albert Lea
Benton, Henry W..Sec. Bk. Bldg., Mpls.
Berg, Leo.....Maple Plain
Benson, And. .....Jackson
Bennett, Fred H.....Simpson
Berg, O. J. .....Garfield
Bergum, S. C.....Kenyon
Benson, H. F.....Morristown
Bennett, W. .....Lowry
Bendel, M., Sr. .....Madison
Berset, Nels .....Kerrick
Benner, Chas. .....Ada
Benson, Iverdrup..Sherman, S. D., R. 2
Berry, Mrs. F. M. .....
....1912 Feronia Av., Merriam Park
Bethke, H. .....Franklin
Betz, F. A. .....Boyd
Bezuer, L. H. .....Highmore, S. D.
Beulow, Geo....3413 Oakland Av., Mpls.
Bjornston, E. T. .....Jackson
Bjornlie, Thorwald .....Madison
Bjerkvi, Jos. .....Zumbrota
Bisbee, John .....Madelia
Bigelow, N. S. T.....Rochester, R. 8
Bigelow, Mrs. M. L. .....
.....4323 Dupont Av. S., Mpls.
Bishman, Mrs. Mary .....Waseca
Bircher, Wm.....661 Ohio Av., St. Paul
Biermann, Henry .....Glencoe
Biron, Robt. H.....Court House, Mpls.
Bixby, J. S. .....Richville
Bisbee, A. J. .....Hopkins
Biltmore Forest School..Biltmore, N. C.
Bigham, D. L.....Redwood Falls
Bigelow, E. E. .....Owatonna

Bjornberg, G. J. .....Willmar
Blaker, C. D. .....Sta. F., Mpls.
Bloomquist, Ole .....Svea
Bluhm, Otto .....Deer Creek
Blakestad, L. .....Lyle
Blackmore, Hon. Jno. C. .....
140 Olliviers Rd., Linwood, Christchurch, N. Z.
Bluhm, A. G. .....Le Sueur
Blatherwick, J. C.....Breckenridge
Blegen, Sandy.....Bixby, S. D.
Blessing, David S. .....
.....4 N. Court St., Harrisburg, Pa.
Black, G. D. .....Independence, Ia.
Black, Wm. B.....Richmond
Black, A. P. .....Lemmon, S. D.
Bloom, Minnie J.....Worthington
Bliss, H. L. .....Hampden, N. D
Black, M. O. .....Annandale
Bosshard, Herman .....Moorhead
Bothman, C. H. 2124 Dupont Av. S., Mpls.
Boardman, Mrs. H. A. .....
.....1336 River Boul., St. Paul
Bollmann, Paul .....Balaton
Boss, Prof. Wm. .....
.....1439 Raymond Av., St. Paul
Boardman, F. H. 537 Andrus Bldg., Mpls.
Boline, J. A. .....Clarissa
Bonde, Edwin .....Cottonwood
Boelk, Ferd .....Lansing
Bohnsack, Chas.....Grandin, N. D
Bostin, T. .....Morris
Bofferding, W. H. .....
.....1423 Emerson Av. N., Mpls.
Boettcher, Rev. H.....Gibbon
Bogart, Mrs. H. .....
.....1761 Lincoln Av., St. Paul
Bock, John .....Wabasso
Botzet, M. A.....Minnesota City
Borchert, L. W. .....Mentor
Boehning, Wm. F.....Stillwater R. 4
Bond, John H.....Jonesdale, Wis.
Born, Otto G. 674 Manomin Av., St. Paul
Bonderud, O. O.....Carrington, N. D.
Bossen, C. H..4020 Bryant Av. S., Mpls.
Boeglin, L....3800 Bryant Av. S., Mpls.
Bowman, Dr. F. C. .....
.....119 6th Av. W., Duluth
Boyle, M. G. .....Adrian
Bowers, Merrill .....LeRoy
Boucher, Geo. J. .....Amiret
Boughen, W. J.....Valley River, Man.
Boyington, Mrs. Rebecca P. .....
.....Lakeside, Duluth
Brady, C. H. .....Medford
Bramhall, Mrs. W. E. .....
.....Care The Aberdeen, St. Paul
Brandow, Mrs. .....Brandow
Brasch, B. .....Granite Falls
Brandvold, K. H. .....Dalton
Brandt, P. C. .....Morris
Brandt, C. A. .....Donnelly
Brandt, P. A. .....Erskine
Brandt, Chas. .....Kerrick
Brander, J. M. .....Sauris, N. D.
Bredvold, Martin .....Springfield
Brevig, C. L. .....Starbuck
Brevig, A. L. .....Starbuck
Break, L. D. .....Maple Lake
Briggs, E. M. .....Anoka
Briggs, H. W. .....Sanborn
Briggs, O. P. .....
.....730 Met. Life Bldg., Mpls.
Brewer, I. C. .....St. Charles
Brentson, S. .....Janesville
Brewer, W. W. .....Orisko, N. D.
Bredvold, L. L. .....Belview, R. I.
Brewster, C. E. .....Howard Lake
Briggs, Geo. A. .....Traverse
Bredesen, Ben .....Starbuck
Breen, Fred.....City Hall, St. Paul

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Bretz, Mike.....St. Cloud, R. 6
Bremmer, Henry W.....Renville
Brunold, John .....Richmond
Brown, John M.....Elk River
Bryant, Mrs. Chas.....Sauk Center
Brush, G. H. R.....Owatonna
Brown, A. D.....Baraboo, Wis.
Brown, Mrs. G. T.....
.....730 Selby Av., St. Paul
Broberg, Peter .....New London
Broman, Aug. .....Atwater
Brooks, W. W.....Long Prairie
Brunkow, Chas. A.....Delano
Brown, Aug. .....Winthrop
Brown, Thos. S. .....Windom
Broden, Gust. A.....Murdock
Brown, W. A.....Brownsdale
Brown, F. J....504 W. 5th St., Winona
Brown, E. S.....Fisher, R. 2
Brown, J. P.....Excelsior
Brown, W. E.....Paynesville
Brown, O.....22 S. 6th St., Mpls.
Brooks, R. J.....Byron
Brown, John A.....Windom
Broome, J. M.....Mankato
Brummel, P. J.....Hastings
Brush, C. M.....Amboy
Bryan, Wm. .....Red Wing, R. 2
Bryant, Geo. R.....Hewitt
Brosious, E. J.....Stillwater
Brohang, O. O.....Shelly
Brogren, P. A.....New London
Broberg, A. J.....Dassel
Brower, John .....Randall
Brodt, Chas. A.....Hopkins, R. 3
Bugbie, A. E.....Paynesville
Bunnell, M. C.....Newport
Bull, Prof. C. P.....St. Anthony Park
Buchanan, D. W.....St. Charles, Man.
Buback, Chas.....Olivia
Buetow, P. .....Belle Plaine
Buggs, Wm. A.....Winona
Buckman, Arthur S.....Loretto
Bubolz, Herman .....Winthrop
Bue, Hagbauth .....Northfield
Buckmister, Chas. .....Amboy
Buckman, Louis .....Annandale
Broberg, C. W.....Dassel
Buro, John .....Cook
Burrows, Walter .....Delano
Burtness, H. E.....Caledonia
Burley, Miss Hypatia....Minnesota City
Burg, Oscar .....Maple Plain
Burlington Lumber Co.....Dubuque, Ia.
Bussee, H. F....Merriam Park, R. F. D.
Butterfield, F. J.....Long Lake
Butterfield, Mrs. F. J.....Long Lake
Butler, Miss Eloise .....
.....2628 Clinton Av., Mpls.
Butler, G. .....Mabel
Byers, N. H.....Westbrook

Cairns, Miss Gertrude M.....
.....Ellsworth, Wis.
Campbell, H. A.....
.....1509 Ashland Av., St. Paul
Cameron, G. B.....Aneta, N. D.
Cant, Mrs. W. A.....Duluth
Cappellen, Dr.....Stillwater
Campbell, W. G.....
..Care Fruit Grower, St. Joseph, Mo.
Cameron, John .....Sta. F, Mpls.
Campbell, Alex .....Viola
Caine, Peter H.....Murdock
Carlson, C. H.....Fertile
Carpenter, W. H.....Lampson, Wis.
Carpenter, Geo. L.....Vermillion, S. D.
Carter, A. N.....Howard Lake
Carmen, C. A.....Hankinson, N. D.
Caruthers, J. T.....Willmar
Carlson, Wm. A..Deering, N. D., Box 214
Carter, Mrs. E. M.....Hesper, Ia.
Carlson, A. P.....Gibbon
Carlson, C. O.....Lindstrom
Carlson, And. .....Grandy
Carlsen, Alfred .....Grantsburg, Wis.
Carpenter, M. B.....
.....Hotel Aberdeen, St. Paul
Carlson, D. A.....Maple Plain
Carey, Geo. W.....Lidgerwood, N. D.
Carlton, H. C.....Lovell, Wyo.
Carlson, A. S.....Tracy
Carlson, Ludvig .....Willmar
Carrier, R. M.....Sardis, Miss.
Caswell, Arthur A.....Anoka
Cavallin, E. E.....Two Harbors
Catlin, T. J., M. D.....Waukenabo
Cate, L. O.....Grasston
Casey, Jos. .....Litchfield
Caselman, W. E.....Lockhart
Case, Osen .....Sleepy Eye
Caylor, M. .....Kimball
Cerniak, Rev. J.....New Prague
Chamberlain, Mrs. L. M.....
.....Sta. F, R. 3, Mpls.
Chandonnet, Rev. Z. L.....Perham
Challman, S. A.....
.....1107 S. E. 7th St., Mpls.
Charlson, A. .....Skyberg
Chase, O. C.....Fergus Falls
Chaffee, G. A.....Merriam Park
Charlson, S. .....Dennison
Chapman, H. H.....
.....331 Jackson St., St. Paul
Chapman, N. E.....Owatonna
Chase, David E.....Long Prairie
Chase, W. S.....Bellefourche, S. D.
Chase, Leroy .....Swanville
Chack, Mrs. Sarah .....Brandon
Chapman, H. H.....Yale
Forest School, New Haven, Conn.
Christopherson, Nels .....Hoffman
Cheney, W. H.....Olivia
Christenson, B. P.....Hutchinson
Church, W. J.....York, N. D.
Christianson, P. A.....Hinckley
Christenson, O. A.....Glyndon
Christenson, Carl J..Madelia, R. 3, Box 57
Christenson, A. A.....Tracy
Chesley, Geo. B.....Beardsley
Chester, Wm. E.....Northfield
Christian, Hannah .....
.....318 25th Av. W., Duluth
Christiansen, John .....
.....Robbinsdale, R. 2, Box 32
Clemons, L. A.....Storm Lake, Ia.
Close, M. J.....Robbinsdale
Clarkson, S. F.....St. Charles
Clement, W. A.....Waseca
Clausen, P. .....Albert Lea
Clementsen, Nels .....Fertile
Clinch, Miss L. H.....
.....1852 Dayton Av., St. Paul
Clingman, Frank .....Austin
Clinton, Nic. .....Watkins
Closkey, Geo.....Richmond
Clark, H. M.....Marshall
Clark, F. V.....Storden
Clark, Geo. .....Sarles, N. D
Cloquet Lumber Co.....Cloquet
Coe, W. T.....
.....410 N. Y. Life Bldg., Mpls.
Collins, P. V.....N. W. Agri., Mpls.
Colling, Jas. H.....Inkster, N. D.
Colman, Mark .....Morris
Conrad, John .....Ortonville
Coffin, W. F.....Homer
Colburn, G. B.....St. Cloud
Comstock, A. J.....Rochester
Comstock, E. F..1134 Jefferson St., Mpls.
Collins, L. W..326 Sec. Bk. Bldg., Mpls.
Conway, C. J.....Shak pee
Cole, M. H.....Faribault
Conglin, Mike .....Montgomery
Colby, Chas. M.....Brownsdale
Cobelight, N. W.....Redwood Falls

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Colgen, Nic. ..... St. Charles
Coder, Hiram ..... Calvin, N. D.
Converse, T. R. ..... Stillwater
Conrad, G. L. ..... Kiester
Coffin, Miss F. A. .....
..... 1925 Woodland Av., Duluth
Conaughy, Miss Laura .....
..... R. 2, Box 77, Mpls.
Colvin, Mrs. A. R. .. Davern Av., St. Paul
Coleman, Jas. ..... Clara City, R. 2
Constance, Wm. ..... Hopkins
Cook, Dewain ..... Jeffers
Corson, Chas. V. ..... Glencoe
Cooke, F. J. ..... Ulen
Cook, H. C. ..... Argyle
Cooper, Thomas ..... Alexandria
Cook, A. D. ..... 225 Kasota Blk., Mpls.
Corrin, Robt. ..... Miller, S. D.
Cooper, F. D. ..... 403 Lindley Blk., Mpls.
Corey, Geo. B. ..... Medford
Cowles, F. J. ..... West Concord
Cox, W. T. .....
.. Forest Service, Washington, D. C.
Cox, W. H. ..... Fairmount, N. D.
Coss, L. E. ..... Luverne
Coughlin, Jesse A. ..... Detroit
Craig, C. P. ..... Duluth
Crassweller, Arthur ..... Duluth
Crane, H. L. ..... Excelsior
Crawford, W. M. ..... Wahpeton, N. D.
Cramer, Fred ..... Mapleton
Crane, R. E. ..... Grand Meadow
Crawford, A. O. ..... Hopkins
Cralle, Geo. H. ..... Eagle Bend
Cram, M. M. ..... Mankato, R. 6
Crawford, Wm. O. ..... Beaver Creek
Crane, Geo. ..... Lewiston
Crafts, Dr. L. M. .....
..... 610 S. E. 5th St., Mpls.
Crosby, S. P. ..... Braham
Cross, Mrs. E. ..... Sauk Rapids
Crockett, E. D. .....
..... 2611 Stevens Av., Mpls.
Crosson, J. W. ..... New Brighton
Crosby, F. M. ..... Hastings
Crowe, W. H. ..... Osakis
Crotty, Jos. P. .... 814 Nicollet Av., Mpls.
Crowley, Mrs. J. H. .....
..... 113 W. 2nd St., Duluth
Cuzner, E. A. .....
.. Univ. Av. & 13th Av. S. E., Mpls.
Cummings, Albert ..... Fairfax
Cutting, S. ..... Carnegie, Man.
Cumming, Geo. W. .. Sta. F, R. 3, Mpls.
Culver, E. ..... Sta. F, Mpls.
Cutting, Frank H. .. City Hall, Duluth
Curtis, W. G. ..... Hubert
Culle, Mrs. C. ..... Kerrick
Czanstkowski, Albert ..... Delano

Dahl, Lewis D. ..... Atwater
Dahl, S. M. ..... Spicer
Dahlheimer, Val. ..... St. Michael
Dahlen, O. E. ..... Albert Lea
Dahl, F. A. ..... Chisago City
Danielson, John W. ..... Olivia
Danielson, Solomon ..... Rothsay
Dansinberg, T. J. .....
..... 525 University Av. S. E., Mpls.
Danielson, Geo. ..... Crookston
Dana, Mrs. Dora. ..... Litchfield, R. 5
Dahlquist, J. P. ..... Tintah
Dale, O. G. ..... Madison
Dallenberg, N. ..... Hayfield
Dale, Mrs. M. E. ..... Browns Valley
Dahlstrom, John F. .....
..... 2523 E. 22d St., Mpls.
Damschen, Henry ..... Pelican Rapids
Dahlheimer, Frank ..... Anoka
Dalen, David ..... Bridgeport
Daubenberger, E. V. ..... Chokio
Day, Stephen H. ..... Northfield
Day, F. L. ..... Detroit
Day, L. E. ..... Clinton Falls
Davenport, W. R. ..... Dennison
Davison, A. H. .....
..... State House, Des Moines, Ia.
Davis, Even J. ..... Garwin
Darling, Dr. C. H. .....
..... 697 Endicott Arcade, St. Paul
Davis, Thos. J. .....
..... 1601 London Road, Duluth
Davies, D. E. ..... Lake Crystal
Dawson, Ed H. .. Daysland, Alberta, Can.
Darnell, Samuel ..... Driscoll, N. D.
Davidson, P. A. ..... Emmons
Davin, J. J. ..... Roberts, Wis., R. 1
Davis, I. ..... Garvin
Day, W. A. ..... Bradley, S. D.
Darrow, G. W. ..... Rockford
Davis, Mrs. T. J. .....
..... 1601 London Road, Duluth
Deline, W. F. ..... Cannon Falls
Decker, J. S. ..... Austin
De Boer, Henry ..... R. 2, New Brighton
The Deming Co. ..... Salem, Ohio
De Mars, G. J. ..... Fertile
Dehrer, Henry ..... Mendota
De Long, T. R. ..... Collins, N. D.
Deitz, Chas. ..... Vesta
Deike, Wm. C. ..... Faribault
Deary, Wm. ..... Potlatch, Idaho
Derickson, G. P. .....
..... 1760 Hennepin Av., Mpls.
De Wolf, Mrs. Jessie. .....
..... 654 Hague Av., St. Paul
De Vine, M. W. ..... Delano
Devine, Ash. ..... Mapleton, N. D.
De Smidt, A. A. ..... Battle Lake
Destad, O. O. ..... Hayfield
Dewey, S. R. ..... Monticello
Des Lausaers, A. E. ..... Hamel
Dewey, D. A. ..... Ogilvie
Dickson, Geo. F. ..... Rugby, N. D.
Dickman, E. J. ..... West St. Paul, R. 2
Diethelm, M. ..... Victoria
Dittbenner, R. C. ..... Sleepy Eye
Dickson, W. A. ..... Almena, Wis.
Dickinson, W. E. ..... Osage, Ia., R. 1
Diehr, Rev. Math. J. ..... Albertville
Dickenson, W. C. ..... Osseo
Dix, Chas. ..... Sauk Center
Dimenn, J. J. ..... New Richland
Digness, Martin ..... Weaver, N. D.
Dixon, Jas. K. ..... North St. Paul
Dodds, J. E. ..... Wheaton
Doepping, Wm. ..... Claremont
Domrese, F. G. ..... Magnolia
Dockstader, Dr. A. C. ..... Hastings
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Dokken, C. O. ..... Kenyon
Dockstader, Mrs. W. E. .....
..... Bradley St. Sta., St. Paul
Dobbin, J. J. ..... Excelsior
Donovan, Raymond L. ..... Excelsior
Doleman, N. F. ..... Tintah
Dodge, E. F. ..... Hector
Dobbyn, F. W. ..... Madison
Doudna, J. M. .....
..... 5129 Thomas Av., Mpls.
Doty, B. E. ..... Tintah
Doyle, John ..... 358 Banfil St., St. Paul
Dove, John O. ..... Madison
Drum, S. H. ..... Waseca
Dreuckhahn, Wm. ..... Minneiska
Dresson, P. J. ..... Arco
Dressen, Theo. ..... Tyler
Drake, Mrs. H. T. .....
..... 435 Portland Av., St. Paul
Drube, Fred ..... Madison
Drake, N. S. ..... Sioux Falls, S. D.
Dryer, Mrs. R. C. .....
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Durand, Albert ..... Waseca

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Dutrow, B. H.
...Atlantic Bldg., Washington, D. C.
Du Lac, Mrs. O.....Faribault
Dubbels, J. .....Lincoln
Dummer, Michael .....Gibbon
Dutton, A. A.....Dodge Center
Duis, Geo. E.....Grand Forks, N. D.
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Dybdal, Foston .....Elbow Lake
Dykeman, E. L.....Stephen
Dyson, Mrs. Jacob.....Henrietta
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.....20-24 W. 5th St., St. Paul

Eastman, J. D.....Browns Valley
Eastgate, J. E.....Larimore, N. D.
Eaker, E. C.....Albert Lea
Easterday, J. C.....Fergus Falls
Eastburn, G. W.....Stephen
Ebert, Conrad .....Osseo
Eckley, J. L.....Barnum
Eckman, E. M.....Hendrum
Eddy, Chas. T.....Willmar
Eddy, H. D.....Le Sueur Center
Eddy, J. O.....Montevideo
Edlund, E. .....Detroit
Eddy, P. E.....Howard Lake
Effertz, Peter .....Norwood
Egnell, A. .....Howard Lake
Eggen, Otto.....Effington, S. D.
Eggen, Henry .....Garfield
Eisele, Otto .....Eden Valley
Eklund, P. A.....Willmar
Elstad, J. H.....Franklin
Elwin, Maj. Jas.....Richfield
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Ellingson, S. .....Sta. F, R. 4, Mpls.
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Ells, Dr. B. F.
.....501 Trust Bldg., Rockford, Ill.
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Elmer, E. P.....Cottonwood
Elmgren, F. A.....Rudser, N. D.
Elliot, Stuart...Maple Plain, R. 3, Box 8
Elias, Albert.....Hayfield
Ellis, Geo.....Browns Valley
Emerson, J. B., M. D.
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Emmans, N. H.
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Emanuelson, Mrs. J. J.....Rush City
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Engman, A. E.....Hallock, R. 1
Enstad, L. O.....Granite Falls
Engstrom, Daniel
.....New Richmond, Wis., R. 3
Englestad, M. A. C.....Fertile
Engel, A.....Morgan
Engles, Geo. F.....Chaska
Engel, A. W.
.....838 N. State St., Chicago, Ill.
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Eppel, Chas.....Delano
Ericson, G. R.....Goodhue
Erickson, G. P.....Svea
Erlandson, Robert .....Kennedy
Erlandson, Carl .....Kennedy
Erdahl, Ole .....Appleton
Erickson, E. G.....Fertile
Erickson, Chas. G. Winthrop, R. 3, Bx. 35

Erwin, D. A.....Waseca
Ericksen, Halgrin .....Westbrook
Erickson, M. L.....Medford, Ore.
Erickson, Joseph .....Waterville
Erickson, John.....Balaton
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Essig, John .....New Ulm
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Evenson, Nels O.....Litchfield
Evans, John L...424 2nd Av. E., Duluth
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Evert, C. H.....Olivia
Ewald, Julius .....Mpls.
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Ewing, A. W.....Dawson
Ewell, Rev. Edwin.....Waseca

Fallis, M. H.....Jamestown, N. D.
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Falkenstein, F. C.....Bottineau, N. D.
Fagerberg, L. T.....Elbow Lake
Faehn, F. J.....Wallace, S. D.
Farnsworth, C. H.....Albert Lea
Farm, Gjerstad .....Gary
Farrar, F. F.....White Bear
Farmer, C. R.....Ada
Farmer, E. A.....R. 2, Mpls.
Farrar, O. L.....Lewiston
Fanning, R. B..602 Kasota Bldg., Mpls.
Farmer, H. J.....Airlie
Farmer, C. R.....Ada
Ferson, C. E.....South Haven
Featherston, S. T.....Red Wing
Ferguson, Jas. A.....Duluth
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Ferodowill, F. X.....Wayzata
Felland, Prof. O. G.....Northfield
Ferch, C. F.....Odessa
Feragen, J. O.....Hitterdal
Feleen, Nels N.....Spicer
Fisher, Mrs. Abbie J.
.....Merriam Park, R. F. D.
Fitzer, Chas. .....Robbinsdale
Fitzpatrick, John..Mer. Nat. Bk., St. Paul
Finnesgaard, C. K.....Kenyon
Fish, Joe .....Butler
Finkel, Henry .....Chaska
Fillebrom, Mrs. J. Walter.
.....132 E. 3rd St., St. Paul
Fishback, P. L.....Monmouth, Ore.
Fisher, R. W.....Arlington
Fiene, H. C.....Wood Lake
Fink, Christian .....Waconia
Fisher, J. W.....Duane
Firth, V. H.....Lewiston
Fisher, Paul .....New Ulm
Fisk, H. S.....Pillager
Fisher, Emil .....Owatonna
Fish, H. C.....Clinton
Fingerson, G. J...Murdock, R. 3, Bx. 32
Field, Frank J.....New London
Fisher, F. C.....New Ulm
Flannery, G. P.
.....N. Y. Life Bldg., Mpls.
Flagstad, J.....Sacred Heart
Fleming, Lester .....Garden City
Flesland, M. O.....New London
Floreen, Swan .....Constance
Flygare, A. .....Atwater
Flint, Henry W.
.....Tacoma, Wash., R. 4, Box 210
Flatin, G. F.....Spring Grove
Flikka, Olaus .....Shelly
Flood, E. J.....Newman Grove, Neb.

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Flyen, Henry .....Dawson
Flatten, Peter C.....Benson
Foote, P. H.....St. Paul Park
Folsom, C. W.....Paynesville
Foster, J. J.....Slayton
Ford, F. H.....Maple Plain, R. 3
Forsyth, Christ K.....Rushford
Fossbakken, Chris. .....Crookston
Forbes, E.....Barlow, N. D.
Fortin, Geo. E....813 N. Y. Life, Mpls.
Fossum, I. A.....Virginia
Ford, F. E.....Glencoe
Ford, A. J.....New Rockford, N. D.
Fockler, Louis.366½ Selby Av., St. Paul
Forcier, V. E.....Stewart
Foslien, Theo. .....Garfield
Forland, Shiler .....Kasson
Fortin, Phillip .....Hamel
Follet, H. W., Jr.....Sturgis, S. D.
Forhand, J. B.....Annandale
Fratzke, Julius .....Janesville
Fritcher, C. E.....Hancock
Fritze, Leonhard .....Claremont
Fryer, W. E.....Mantorville
Frenn, P. J.....Red Wing, R. 6
Frye, P. H.....Willmar
Freeberg, J. G.....Willmar
Fredrickson, ... C.....Cobden
Freeman, Gust E.....Red Wing
French, Mrs. A. A.....Loveburn, Sask.
Friberg, Emil .....Boyd
Freeman, C. H.....Zumbrota
Frydholm, Martin.....Albert Lea
Fraser, G. .....Anoka
Freeman, E. M.....
....Agri. School, St. Anthony Park.
Fredrickson, Wm. .....Perley
Fredricson, Alfred .....Darling
Frisch, J. P.....Minneska
Fredericson, Gens C.....Tyler
Frank, Herman .....Wood Lake
Frank, David .....Cottonwood
Frenzen, Gust .....Pillager
Frederickson, H. F.....Hanska
Frank, John M.....Belle Plaine
Frick, Wm. .....Pipestone
Frankhauser, C. F.....Anamoose, N. D.
Fuller, E. D.....
.....3417 Longfellow Av. S., Mpls.
Fullerton, J. C.....Fairfax
Fuller, F. C.....Madison, S. D.
Funke, Robt. .....Theilman
Fuller, M. D.....Plainview
Fullbrugge, C....Care Glass Blk., Mpls.
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Gallagher, H. .....Dundas
Galea, Geo. .....Medford
Gaacson, J. G.....Red Wing, R. 1
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Gantzer, Mrs. Daniel .....
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Gastfield, A. F. .....
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Gantzer, Mrs. J. A.....
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Garlick, Eva E.....Janesville
Gates, Rev. Horatio.....Willmar
Gaspard, J. P.....Caledonia
Gay, Fred .....Moose Lake
Gares, Hubert .....Hastings
Gandrud, Alfred .....Glenwood
Gans, J. C.....Odessa
Gausmann, Wm. .....Morris
Garbisch, F. C.....Waltham
Gates, L. D.....Winnebago
Garlock, J. L.....Wells
Garr, H. H.....Whitefish, Mont.
Gesner, Frank .....
Gerdsen, Henry .....Waconia
Gehlhar, Julius .....Glenwood
Gergen, N. B.....Hastings
Gergen, G. .....Cannon Falls
Geiger, Wm. C.....
520 W. Van Buren St., Chicago, Ill.
Gearty, T. G. .....Robbinsdale
Gessner, Oscar .....
.....176 W. Barnard St., St. Paul
Gergen, Math. .....Hastings
Gerlach, Henry.....Long Prairie
Geyerman, F. R.....Brewster
Gibbs, F. H.....St. Anthony Park
Gibbs, Mrs. F. H.....St. Anthony Park
Gibbs, Miss Ida W.....
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Giese, Otto K.....Halloway
Giesman, Miss Rosa B.....
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Gjerset, Albert.....Fergus Falls
Gimmestad, M. O.....Belview
Gilbertson, E. K.....Garfield
Gilman, John P.....Rosemount
Gill, John H.....Altura
Gilmer, John.....Howard Lake
Gippe, Miss Hilda M.....Montevideo
Gilbertson, A. O.....Mason City, Ia.
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Gillespie, J. C....208 W. 37th St., Mpls.
Gillespie, W. E.....R. 1, Box 131, Mpls.
Gislason, G. F.....Greenbush
Gilchrist, E. D.....Monticello
Gilsrud, A. J.....Montevideo
Gillespie, W. E.....Sta. F, R. 2, Mpls.
Glyer, Alfred .....Forest Lake
Glaspell, Bernard.....Jamestown, N. D.
Glaeser, Mrs. Jacob.....Owatonna
Glessing, H. E.....Howard Lake
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Gleason, Mike.....R. 2, Sta. F., Mpls.
Gleason, F. E.....Austin
Goodman, D. E.....Faribault
Godfrey, Rev. J. R.....Stanley, Wis.
Goerdt, Theo. .....Hereford
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Goehring, Chas.....Highmore, S. D.
Goebel, Herman.....Clear Lake, Wis.
Gould, Mrs. Edward .....
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Gorder, A. J.....Starbuck
Gorrie, P. W.....Jordan
Goranson, H. .....Triumph
Grasselli Chemical Co.....St. Paul
Grant, John .....Wyoming
Grant, Eugene .....Moorhead
Grant, L. R.....Battle Lake
Grassie, Wm. .....
....53 Howard Av., Winnipeg, Man.
Grahn, Wm.....Montello, Wis.
Gray, Rev. W. J.1863 Selby Av., St. Paul
Grace, M. G.....Faribault
Grande, Norman .....Cottonwood
Gray, John B.....Excelsior, R. 3
Grafstrom, C. O.....Cambridge
Graves, D. N.....Faribault
Grathwol, Jas. J.....
Greaza, A. E.....St. Paul, R. 4
Gregory, Wm. T.....Beach, N. D.
Green, Prof. S. B.....St. Anthony Park
Gregory, H. .....Jordan
Gregoire, J. H.....Murdock
Grefe, Herman .....Ottertail
Green, Wm. .....Morgan
Gregersen, Jens.....Askov
Greening, C. F.....Grand Meadow
Greenwood, A. L.....Rochester
Greeley, F. A.....Kimball
Gress, G. M.....Sleepy Eye
Greely, E.....Alden
Gregor, John.....Fort Ransom, N. D.
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Groat, H. G.....Anoka

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Grimstad, T. K.....Brewster
Grothwohl, John.....Fairmont
Grunklee, H. A.....Clairmont
Gunderman, H.....Wabasha
Gurney, C. W. .....Yankton, S. D.
Guiterman, A. S.....
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.....Associated Charities, St. Paul
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Gustafson, John .....Kennedy
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Guidmyst, L. E.....Rollingstone
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Gynild, Rev. E.....Willmar

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Hakel, Adolph.....Silver Lake
Hakanson, John .....Bertha
Hadley, Emerson .....
.....123 Farrington Av., St. Paul
Haecker, Prof. T. L.....
.....Exp. Sta., St. Anthony Park
Haagland, A. H....St. Paul (G. N. Ry.)
Haase, Gust.....Bertha
Hagen, Oscar C.....Granite Falls
Hagen, D. .....Elkton
Hall, W. T.....Hopkins
Hallgren, Aug. .....Eagle Bend
Hall, Jackson .....Dent
Halverson, Peat .....Kerkhoven
Halverson, Alfred .....Spring Grove
Hallstrom, Oscar H.....Gibbon
Halverson, Hans O.....Moose Lake
Halverson, A. L.....Sebeka
Hall, Wm. I.....Red Wing, R. 2
Haley, D. W.....Willmar
Halverson, Oscar .....Benson
Hale, Jas. I.....Deerwood
Hall, R. F.....New Auburn
Hanson, Emil.....Ryder, N. D.
Hangrud, T.....Pelican Rapids
Hanson, Chris. .....Rothsay
Hanchett, W. H.....Sparta, Wis.
Hamnstrom, C. J.....New Brighton
Handy, A. M.....Granada
Hansen, H. F.....Albert Lea
Hanson, Osten .....Twin Valley
Hansen, Chris.....
Hamlin, A. .....Spring Valley
Hanson, Hon. A. L.....Ada
Hanson, Simon J.....Dawson
Hanson, Jas. F.....Fertile
Hanson, P. M.....Canby
Hanson, Frank O.....Alexandria
Hanson, C. L.....Fertile
Hansen, C. N.....Rush City
Hammer, M. E.....Heiberg
Hanson, L. O.....
.....Red Wing, R. 9, Box 24
Hancock, Mrs. F. A.....Morris
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Hanson, Christover .....Westbrook
Hanson, H. C.....Barnum
Hanse, L. L.....Morris
Hanson, John H.....Starbuck
Hamre, E. J.....Granite Falls

Hanson, T. H.....Brandon
Hammer, H. S.....Rothsay
Hansen, L. O.....Donnelly
Hansen, C. .....Hanska
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Harrison, F. M.....Glenwood
Haralson, Chas. .....Excelsior
Harrison, H. W.....Le Roy
Harrison, J. F.....Excelsior
Harrison, J. R.....Eden Prairie
Harbaugh, F. .....White Bear
Hartman, F. E.....Minneiska
Harvey, C. M.....Excelsior, R. F. D.
Harrison, M. B.....Comfrey
Harrington, L. P.....Crookston
Haseltine, E. W. .....
.....4025 Bryant Av. S., Mpls.
Hartung, Jos. .....Avon
Hartman, Frank .....Iona
Haralson, Fred E. .....
.....Agri. School St. Anthony Park
Harald, S. .....
Harris, M. D.....Lovell, Wyo.
Harrison, F. J.....Dodge Center
Haska, John J. .....Renville
Harold, Geo. E.....Maiden Rock, Wis.
Hawkinson, Arthur.....Center City
Hawkins, Mrs. Alice M. .....
.....1523 Fremont Av. N., Mpls.
Hathaway, C. E.....Northfield
Hawkins, J. S.....
.....1523 Fremont Av. N., Mpls.
Haynes, Prof. A. E. .....
.....703 River Road E., Mpls.
Hawkins, John.....Box 495, Mpls.
Hawkins, Mrs. John.....Box 495, Mpls.
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Hawkes, A. S. .....Waseca
Hawkins, R. H.....Houston
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Hawkins, Alf. O.....Wayzata
Hawkins, J. B.....Benson
Hazelton, L. W.....Cutler
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Hawkinson, John A....Red Wing, R. 6
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Hays, Mrs. A. De Long.....Nelson, Neb.
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Hatledal, Ole C.....Benson
Havel, Frank .....Browerville
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Healy, G. B.....Sioux City, Ia.
Heidemann, Fred.....Kenmare, N. D.
Heifort, E. A.....Stillwater
Helm, David .....Fertile
Heins, C. A.....Olivia
Hedman, L. L.....Lamberton
Hellzen, C. A.....Clarkfield
Heller, Frank .....Minnesota Lake
Heggenhaugen, Bergen.....Hopkins
Heddin, Harry.....Twin Valley
Head, M. L.....Hartland
Heinzelman, M. M. .....Arago
Helegson, Lewis .....Tracy
Heeker, Hans J.....Worthington
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Hershang, Ed.....Kenyon
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Hofstad, Ole O.....Madison
Hoffman, Mrs. Elizabeth.....Holloway
Holahan, M. C.....Duluth
Honey, C. H.....Park River, N. D.
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Hornby, H. C.....Cloquet

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Hostetter, A. B.....Duluth
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Jacobson, Olof .....Montevideo
Jacobson, Jens .....Madison
Jacobson, Oscar J.....Pelican Rapids
Jarchow, Rudolph.....Stillwater R. 2
Jaap, Wm. H. E.....
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Jager, Rudolph P.....
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Johnson, And. .....Mahnomen
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Jordeshangen, Leib. .....Germantown
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Jones, P. M. .....
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Krueger, Mrs. A. C.....Eden Prairie
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Kruson, Louis .....Osseo
Kraft, Chas. .....Odessa
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Larson, C. F. .....Morgan
Larson, L. U. .....Lowry
Larson, And. .....Dassel
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Larson, L.....St. James, R. 2
Larson, John P.....Alexandria, R. 4
Lane, J. W. .....Anoka
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Larabee, B. F. .....Ronneby
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Laughlin, Peter O.....Shakopee
Lawson, C. C. .....Skyberg
Latimer, J. A. .....Winnebago
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Leiner, Daniel .....Morris
Lee, Geo. F. .....Hanska
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Leedy, T. A. .....Cottonwood
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Lee, Ole N. .....Hayfield
Lee, O. A. .....Atwater
Leasman, A. D. .....Hewitt
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Leonard, E. A.....Spring Valley
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Lende, Fred .....Cottonwood
Leslie, Fred .....Stillwater, R. 1
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Lindeman, Ernest .....North Redwood
Lien, Peter A. .....Audubon
Lindquist, W. A. .....Olivia
Lindsay, J. M. .....Austin
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Libby, F. M. .....Robbinsdale
Linton, Harry .....Dodge Center
Livingston, J. W. .....Bennettville
Lightner, Mrs. W. .....
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Lindow, A. F.....De Graff
Lindstan, John A. J.....Lindstrom
Lindsay, F. F. .....
.....25 Seymour Av. S. E., Mpls.
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Linton, Robt. .....
1045 Everett Court, St. Anthony Pk.
Liester, Henry .....Wykoff
Lindgren, And. .....Red Wing
Linneman, Fred .....Nerstrand
Linman, Oscar .....Willmar
Linman, Victor A. .....Willmar
Lindsey, Geo. S....Torrey Bldg., Duluth
Lorens, Wm. .....Center City
Longfellow, D. W. .....
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Lokensgaard, H. L. .....Madison
Loken, Peter .....Elizabeth
Logstrom, Reinhold .....Atwater
Loftfield, Berner .....Madison
Lundquist, Oscar .....Stillwater
Ludlow, H. J. .....Worthington
Luitjens, Alt. .....Clara City
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Lundholm, Dr. E. M. .....
.....677 University Av., St. Paul
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Luoto, John .....Kimball
Luby, Maurice.....Hopkins, R. 3
Loveland, T. A. .....
.....503 Oneida Bldg., Mpls.
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Locke, A. W.....Dodge Center
Lombard, E. S...2517 W. 52nd St., Mpls.
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Lorence, Jos.....Sta. F, R. 2, Mpls.
Loegering, Aug.....Long Prairie
Lovold, E. J.....4125 31st Av. S., Mpls.

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Lumburg, Fred .....Mapleton
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Ludthi, Fred .....Hawley
Lucken, K. J.....Portland, N. D.
Ludwig, Mrs. Frank.....Meadowland
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Robertson, Mrs. Eva ..... Crookston
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Robinson, Jas. L. ..... Stacy
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.....3010 S. Aldrich, Mpls.
Whittit, Wm. .....Redwood Falls
Whittit, G. W. .....Redwood Falls
White, C. H.....Excelsior
Whitelaw Brothers.....
.....409 N. 2nd St., St. Louis, Mo.
White, J. B.....
1111 Long Bldg., Kansas City, Mo.
Wichelman, Fred C..Stillwater, R. No. 6
Wicklund, John .....Atwater
Wiegel, H. A.....Magnolia
Wieland, Fred.....Bertha
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1466 Raymond Ave., St. Anthony Park
Wilbur, D. .....Floyd, Ia.
Willette, Jas. .....La Crescent
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.....1046 Wakefield Ave., St. Paul
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Will, O. H.....Bismarck, N. D.
Wilder, R. G. .....Spring Valley
Wilder, C. B. .....Floodwood
Wilder, Mark L. .....Mankato
Wilson, A. .....
Bx. No. 534, Portage La Prairie, Man.
Wilwerding, Nick.....St. Joseph
Willius, F. .....
..514 N. G. Am. Bk. Bldg., St. Paul
Williamson, Nels .....Arco
Williams, C. B. .....No Address
Wilkinson, R. A.....Lake Elmo
Wilson, A. P.....Janesville
Wilsie, Wm. .....Eyota
Willis, Frank .....Marietta
Wilson, A. A.....Redwood Falls
Willow Creek Stock Farm..Ward, S. D.
Wilcox, A. D.....Stillwater, R. 3
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.....Minn. Loan & Trust, Mpls.
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Winther, Henry .....Battle Lake
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Woessner, Wm. .....Elbow Lake
Wold, F. H. .....Willmar
Wold, T. O. .....Kennedy
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Woodruff, C. O.....Excelsior
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Wrigt, A. A. .....St. Cloud
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Wuornos, Henry .....Kimball

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Yegge, C. M.....Alpena, Wis.
Youngberg, C. A.....Cannon Falls
Yoerg, Anthony .....
..710 Pioneer Press Bldg., St. Paul
Young, A. P.....Marine Mills
Yates, I. B.....Madelia
Yale Forest School..New Haven, Conn.
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Young, Oscar .....Maple Plain
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Yany, Rev. V.....New Brighton

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Zachritz, Geo. P.....Excelsior
Zirnstein, O. E.....Comstock
Zempel, R. L.....Deer River
Zimmerman, Jule .....Minneiska
Zimmerman, A. H. .....Chokio
Ziemer, J. F.....Waltham
Zempel, Wm.....Wood Lake
Zimmerman, Philip.....Spring Valley
Ziemer, H. L.....Waltham
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Zom, Henry .....Vesta
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.....104 Groveland Terrace, Mpls.
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..Botanical Gardens, St. Louis, Mo.

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.....State College, Pa.
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Melgaard, H. L.....Argyle
Melinat, Rev. Max.....Ormsby
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Mo, Hans .....Sleepy Eye
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Moyer, L. R.....Montevideo
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334 Hastings St. W., Vancouver, B. C.
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Older, C. E.....Luverne
Onstine, Frank A.....Harmony

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Paulson, Johannes....Richfield, Sta. F.
Pederson, J. S.....Walnut Grove
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Pracna, Frank .....
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Prosser, E. M.....Gully

Quammen, Ole S.....Lemmon, S. D.

Randall, E. W.....St. Anthony Park
Regelmbal, L. O....Crookston, R. No. 2
Roberts, Dr. T. S.....
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Ruff, D. W. C..732 Globe Bldg., St. Paul

Saunders, Wm. .....Robbinsdale
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.....International Bldg., Mpls.
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Sayre, A. M.....Hills
Schaupp, Chas. F.....Wilson
Schell, Otto .....New Ulm
Scott, Rev. W. T.....Colfax, Wis.
Scranton, Ellsworth .....Montrose
Sebenius, John Uno .....
.....Wolvin Bldg., Duluth
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Sherman, E. M.....Charles City, Ia.
Siverts, Peter .....Canby
Slingerland, T. S.....Kasson
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Smith, E. A.....Lake City
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Soholt, Martin .....Madison
Spencer, N. V.....Park Rapids
Stacy, F. N.....3115 S. E. 4th, Mpls.
Stager, Mrs. Jennie.....Sauk Rapids
Stensrud, Hans .....Moorhead
St. John, B. E.....Fairmont
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Swanson, Aug. S.....Merriam Park
Swanson, J. H.....St. James
Swennes, Knute .....Minneota

Tanner, Wm.....Cannon Falls
Teigen, Geo. .....Lowry
Teigland, J. L.....Minneota
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Thomas, A. A.....Dayton, Ohio
Thompson, Mrs. Ida.....Kenmare, N. D.
Todd, Fred G.....
..10 Phillips Place, Montreal, P. Q.
Trefethren, F. G.....Medina, N. D.
Trow, A. W.....Glenville

Underwood, Mrs. Anna B....Lake City
Underwood, Roy D.....Lake City

Van Nest, R. A.....Windom
Voight, L. H.....Hastings
Volstad, Hon. A. J.....Granite Falls

Wagner, J. F.....Bennett, Ia.
Waldron, L. R.....Dickinson, N. D.
Warren, W. T.....Woodstock
Webb, E. A.....St. Paul
Webster, Mrs. W. F.....
.....1025 S. E. 5th St., Mpls.
Wentzel, A. E. .....Crookston
Wentzel, Louie .....Crookston
Wentzel, Wm. F. .....Crookston
Wheaton, D. T.....Morris
Wheeler, C. F.....Excelsior
White, J. C.....Mabel
Williams, J. G..931 Endicott St., Duluth
Williams, M. M.....Little Falls
Wilson, Harold S.....Monroe, N. Y.
Wise, Geo. A.....Moorhead
Wright, R. A.....Excelsior

Yanish, Edward..Federal Bldg., St. Paul
Yost, John L.....Murdock

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Bowen, Mrs. Jas...327 Beacon St., Mpls.
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Brand, O. F.....Faribault
Bush, A. K.....1014 S. E. 7th St., Mpls.
Coleman, N. J.....St. Louis, Mo.
Corp, Sidney .....Hammond
Elliot, Wyman....1412 W. 47th St., Mpls.
Gibbs, Oliver....Melbourne Beach, Fla.
Gardner, Chas. F.....Osage, Ia.
Gaylord, Edson.....Nora Springs, Ia.
Hansen, Prof. N. E.....Brookings, S. D.
Henry, Forest .....Dover
Kellogg, Geo. J.....Lake Mills, Wis.
Kenney, S. H.....Waterville
Kramer, J. C.....La Crescent
Lacey, Chas. Y.....
547 W. Ocean Av., Long Beach, Cal.
Latham, A. W.....
.....3000 Dupont Av. S., Mpls.
Loring, Chas. M.....
.....100 Clifton Av., Mpls.
Lyons, Wm. .....Mpls.
Moore, O. W.....Spring Valley
Patten, Chas. G.....Charles City, Ia.
Perkins, T. E.....Red Wing
Philips, A. J.....West Salem, Wis.
Phoenix, F. K.....Delaven, Wis
Probstfield, R. M.....Moorhead
Redpath, Thos. .....Wayzata
Reed, A. H.....Glencoe
Richardson, S. D.....Winnebago
Schutz, R. A.....Le Roy
Smith, C. L.....Spokane, Wash., R. 8
Tilson, Mrs. Ida E...West Salem, Wis.
Underwood, J. M.....Lake City
Wedge, Clarence.....Albert Lea

Honorary Members for 1910.

Green, Laurenz.....Sta. A., Ames, Ia.
Krueger, A. W.....Groton, S. D.
Nourse, Harvey.....Bayfield, Wis.

Life Members Deceased in 1910.

Sodergren, R. A.....Marine Mills
Day, Ditus .....Pipestone
Owen, S. M.....Mpls.
Smith, Truman M.....San Diego, Cal.
Sargeant, Mrs. H. B.....Lake City

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